AIR TRANSPORTATION

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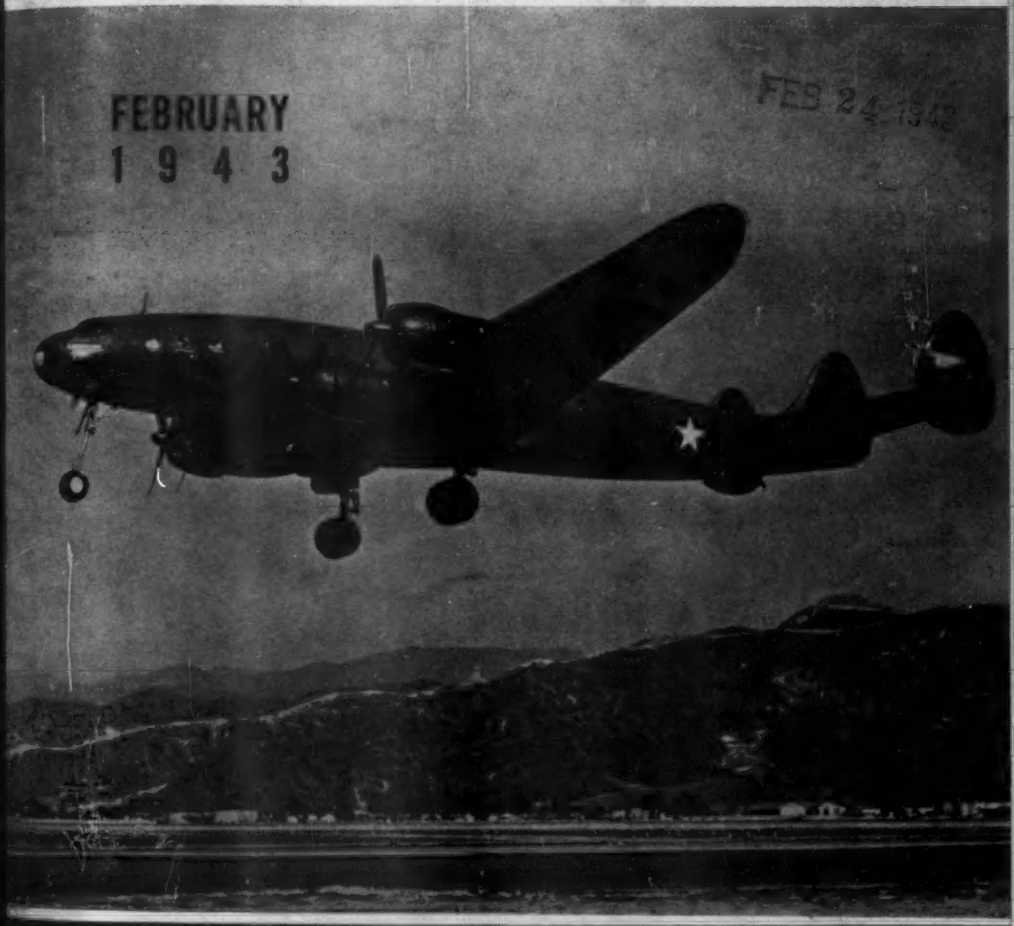

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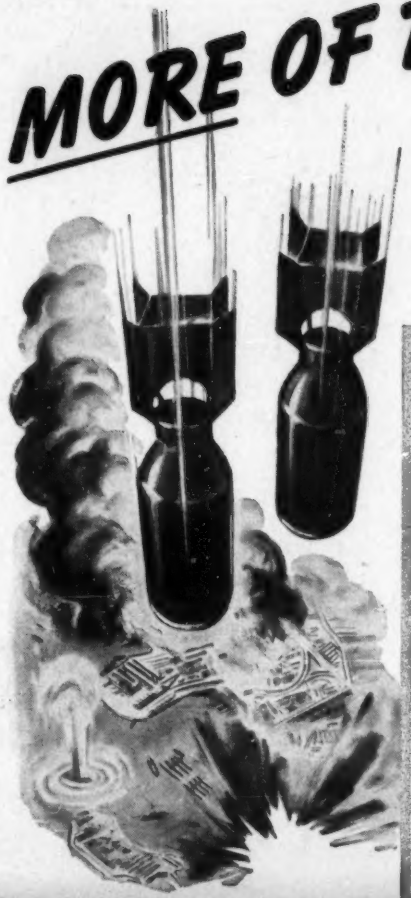

● News of American Flying Fortresses dropping 1-ton demolition bombs on Nazi submarines at their concrete hideouts in the French port of Lorient means that fewer of our sailors and merchant seamen will be floating on life rafts in the cold, storm-tossed Atlantic. It will also mean that more supplies will get through, to enable our men to win this war sooner.

Such news is particularly welcome to Marine Underwriters, who insure America's ships and cargoes. We are also proud to serve by furnishing Inland Marine and Transportation Floaters for war industries, as well as the commercial and personal requirements of today.

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AIR TRANSPORTATION

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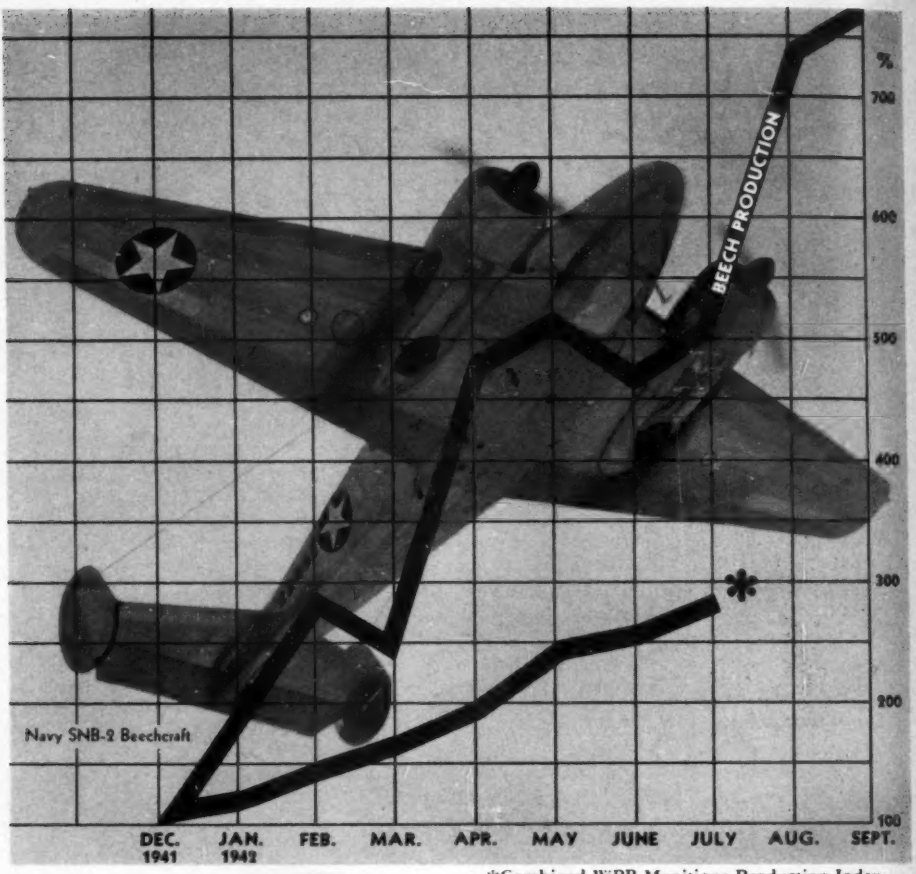
AIR TRANSPORTATION'S COVER

Soaring high over western mountains, Lockheed's proud new* Constellation *makes its maiden flight. With the flight history is made for air cargo, though* Constellation *was born to fly as a luxury passenger liner.



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Performance

Like the aircraft it makes for our country, the Beech organization has demonstrated a high performance factor. The graph above indicates the rate-of-climb of Beech production in the first year of our total war.

Beech Aircraft

CORPORATION

BEECHCRAFTS ARE DOING THEIR PART — WICHITA, KANSAS, U. S. A.

British Aviation Still Blazing New Trails in the Sky

Wartime Conditions Slow Progress, But Postwar Planning Goes On

Every American present and potential user of CARGO-BY-AIR *will be interested in this challenging account of Britain's present problems and future plans in air transport field. Its author, Joan Bradbrooke, has long been prominent in British aviation and aviation reporting. Native of Canada, onetime resident of the U. S., she was the first British woman to receive an "A" license in gliding. Since September 1939, she has been on the staff of the authoritative British magazine,* The Aeroplane, *taking her husband's place as editor of the civil aviation and air transport section. Her husband, Francis D. Bradbrooke, died for his country in an Atlantic air ferry crash a year ago.*

Accompanying her article are illustrations of a British-planned air transport of the post-war era presented to readers of the London Daily Mail *in December by Colin Bednall, the* Daily Mail's *air correspondent. They are reproduced here by special permission of the* Daily Mail *and the British Ministry of Information.*

By JOAN BRADBROOKE

(Exclusive via Cable to AIR TRANSPORTATION)

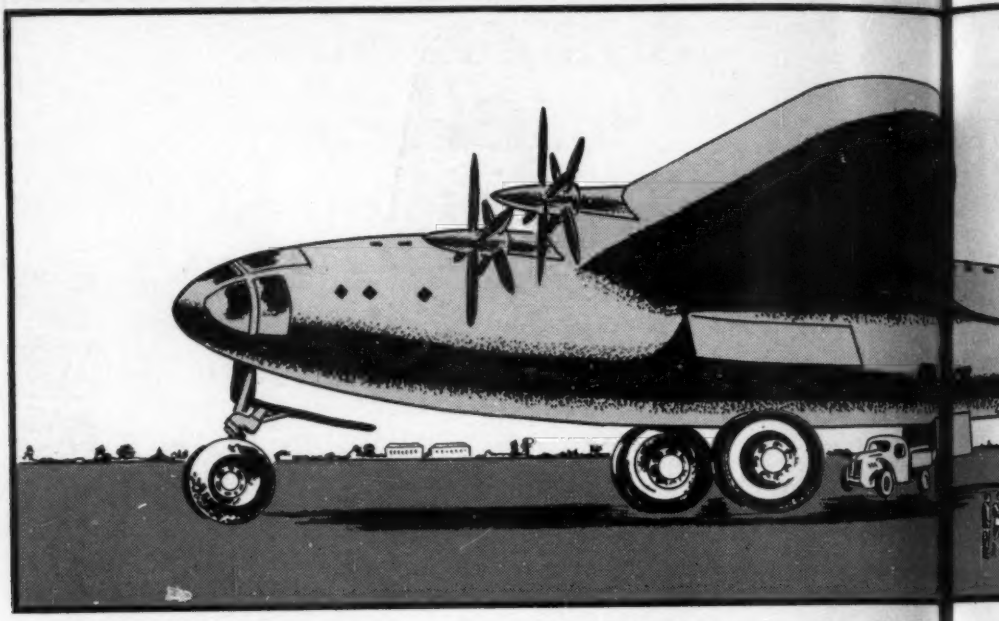
THE development of British air services during the 21 years between the two modern wars has involved two entirely different problems—short internal routes and long overseas routes. Because of these opposing needs, but even more because of political, economic and geographical complications involved in overseas routes, the general development of Britain's transport has followed entirely different lines from American air transport.

The internal air services in Britain are some of the most difficult to operate in the world. The railway and road systems are some of the best in the world. Distances are short, and towns and cities too built up for air fields to be within reasonable distances. The British weather is peculiarly unsuitable, especially during winter, for regular air operations, though after this war that difficulty will have been eliminated by the peacetime uses to which radio location will be put.

One example of the short internal routes is London to Liverpool, 180 miles by air. In 1938 the time taken for this journey, including road connections to and from the airfields, was two hours and 45 minutes—only half an hour less than the train service, which covered 193 miles in three and a quarter hours. On the longer routes—for example, London to Edinburgh—the air service of 368 miles gained two hours on the crack *Coronation Scot* railway service.

Because of these short distances and the excellent railway services, the successful internal or domestic air services have been those which involved short sea crossings, such as London to Belfast, 330 miles by air, and London to Jersey, 181 miles by air, where at least nine hours is saved over the boat and train services.

Before the war Britain had a comprehensive



***Though an artist-engineer's drawing, the proud craft here pictured, reports Colin Bednall, air correspondent of the London* Daily Mail, is "*no dream, but a machine of which every detail has actually been planned—and designed—by British brains.*" Its**

network of internal air routes linking the big main island of England, Scotland and Wales with Belfast and Dublin and with a number of outlying small islands, such as the Isle of Man, the Isle of Wight, Channel Islands, Scilly Isles and the outer Scottish islands. Only those routes which are considered necessary have been retained during the war and these—mainly in the North of England and Scotland and to Ireland—have been operating regularly for the past three years.

The internal air routes have been developed almost entirely by private enterprise, though in 1933 four big main railway companies helped, and today hold almost a monopoly on internal routes.

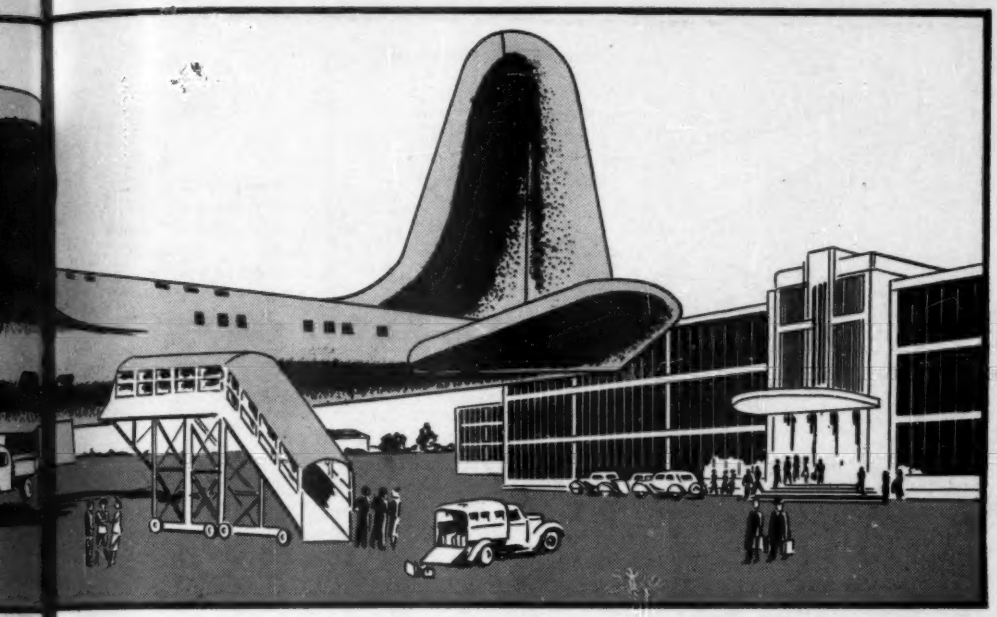
All Letters Flying in 1934 On Pioneer Scottish Route

The British Government always fostered mail carriage by air, and the first inland air mail service started May 8, 1934, between Inverness and Kirkwall (North of Scotland). This service is believed to be the first in the world to carry all letter mail by air as an ordinary public service without surcharge.

Airplane types used on internal routes for many years have been mainly De Havilland two- or four-motor biplanes, easy to maintain and economical to operate, but not particularly fast.

European and overseas routes have always been of greater importance to Britain, and have received more Government support, but the political, economic and geographical problems which have beset them have been unparalleled in perhaps any other country. Britain's overseas routes to the Empire crossed five continents and thirty countries, with each of which a political agreement had to be signed. Also the routes often had to conform to the wishes of the countries concerned. As an example of these political complications, it was not until 1934 that Britain received permission from Italy to fly from France across Italy on Empire routes. Until them there was a gap which involved an overnight train from Basle, Switzerland, to Brindisi. This gap was not finally closed until 1937 when Empire flying-boats started.

The geographical problems are also acute, and until Empire flying-boats operated at the beginning of 1937, special flying equipment had to be designed and built for tropical



designer is F. G. Miles, long prominent in British air circles. The plan calls for a stratosphere liner to seat 80 passengers for the New York-to-London run—and carry a lot of cargo as well. Note eight-bladed propellers and six landing wheels.

routes in India, Africa and Singapore. The varying climates, and different types of country—deserts, tropical jungles and swamps—all had to be conquered. Airfields had literally to be carved out of the jungle, and stores, equipment, spares and petrol carted hundreds of miles.

As each section of the Empire routes was completed it was put into operation, and in 10 years Imperial Airways Ltd., the "chosen instrument" of the British Government, had developed the routes from England through to India, South Africa and Australia, with a network of air services connecting up at main junctions in each country.

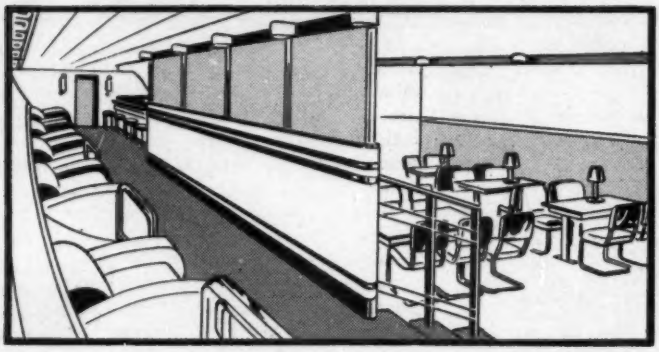
British Did Early Spadework On Today's African Routes

The great trans-African services which are being flown by transports of the United Nations today are frequently heralded as overnight miracles, built up since the war began. Too often the pioneer work done by the RAF and Imperial Airways during the 20 years of peace are apt to be forgotten. Before the Empire route to Africa was opened, Imperial Airways built 27 main airfields and 50 emergency landing grounds throughout the Empire.

Economically, Imperial Airways has always been bound by the Government's injunction that it must become self-supporting as quickly as possible. But for years British air transport struggled against heavily subsidized foreign competing companies on the European routes.

Imperial Airways Ltd., formed in 1924 from four British companies operating cross-channel services, was instructed to concentrate on the Empire routes. Between 1924 and 1937 the total subsidies paid to Imperial Airways amounted to £4,500,000 and with that subsidy the Empire routes and some European services were built up.

By 1935, a number of private companies had been started and were operating unsubsidized services to Europe. These companies amalgamated into one concern—British Airways Ltd. —and in 1936 this organization was chosen by the Government to receive annual subsidies and postal payment for mails. It operated to Paris and Scandinavia and also was the first British company to operate night mail and freight service to Scandinavia and Germany. By the beginning of 1939 this company was operating regular fast services with Lockheed Electras and 14's to Copenhagen, Stockholm,



So big is the Miles-designed British plane that it would have a cocktail bar something like this, says its planners. The dining salon is at the right.

Paris, Brussels, Berlin, Warsaw, Budapest and Zurich.

Britain has led the world in two respects in air transort. It was the first country to put into regular operation four-motor airliners. The slow but safe Handley Page HP 42 of Imperial Airways started in 1931 and maintained an unequaled record of reliability until their retirement in 1940—and it pioneered the "all up" air mails.

Imperial Mails Approached Tonnage of Actual Cargo

By the summer of 1937, the Empire airmail scheme was operating on the through flying-boat service to Africa at normal postage rates of one and a half pence per half ounce, and early in 1938 it was extended to India and Malaya. In June 1938 Australia was brought into the scheme. There were then eight weekly services to Egypt, five to India, three to Australia and Africa.

Before the war only about three countries in the world had had much experience in carrying large items of freight by air—Canada, Central America and New Guinea. Yet mails weight carried by the British overseas routes might also be considered freight. By the end of 1938 Imperial Airways' fleet of 87 aircraft was carrying, in addition to large numbers of passengers and much freight, 24 tons of mail from Britain each week. During the first six months of 1939 a total of 2,116,000 pounds of mail was carried over the empire routes.

Cargo today is generally thought of in terms of shiploads. Before the war most airlines in the world carried freight though in 1919 this amounted to a negligible amount of small parcels on the British cross-channel services. By 1934, during busy times, as much as 60 to 80 tons of goods was carried into and from Croydon by British air services.

This freight was mainly of the luxury class consignments—Paris models and furs flown to and from Paris, many hundreds of pounds of flowers and bulbs brought to England by air, precious art treasures, perishable delicacies, whole or parts of zoos flown from one country to another—but for many years the greatest traffic was probably in gold.

The Empire routes also carried their share of freight of many luxury articles being flown from Britain and also many important and delicate pieces of machinery. Pumping plants, motorcar parts, airplane parts, rock drills and many other such items needed urgently in such places as Africa were flown out on the Empire services.

All-Cargo Service Started By British Six Years Ago

Freight carrying was complicated in Europe by a number of documents which had to be carried for each goods consignment, such as consignment note in sextuplicate, together with supplementary certified invoices and certificates of origin. For every bag of mail (usually 400 to 500) there had to be waybills showing the origin, weight and destination of each bag. Small wonder that Imperial Airways introduced a purser as an ordinary member of the crew.

The *first air organization in Europe to specialize exclusively in carrying merchandise by air* was a British company. International Air Freight was formed in 1937 and operated two services daily—between London and Amsterdam and London and Brussels—with Curtiss Condors specially modified to carry freight. The general rates were six and a half pence

(18 cents) for approximately one kilogram for consignments of from 51 to 2,000 kilograms. Freight carried included machinery, pianos, livestock, race horses, flowers, bulbs.

Unfortunately, when it was preparing to build its own special freighters, this company was a victim of the international crisis of 1938, and suspended operations in 1939. It was a bold experiment and, but for the international situation, might have led to AIR CARGO on a large scale.

When the war broke out in September 1939, Britain's shortage of commercial flying equipment was already acute, because of Government preoccupation with expanding the RAF, and it has become steadily worse. The Government decided that military machines must come first and no civil airplanes could be built. Plans had already been made to form a joint corporation of Imperial Airways and British Airways, and although British Overseas Airways Corp. officially was not started until April 1, 1940, the two companies operated as one from the beginning of the war. Some of their equipment was taken over by the Government and many of their crews, traffic and maintenance personnel were drafted.

Route Miles Up Almost A Half Since War Began

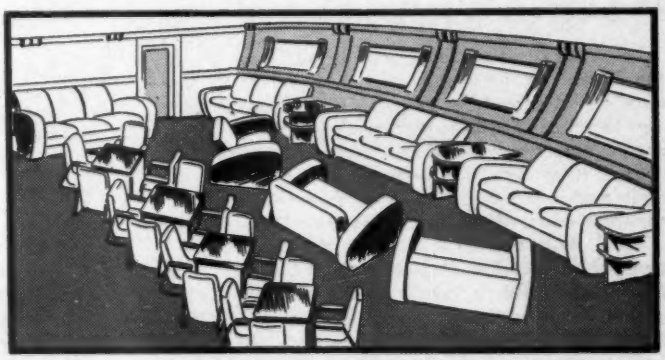
In the past three years many Empire routes had to be suspended, but new routes have taken their place. Much pioneering work has been done, such as the route to West Africa, which was first flown without preliminary surveys in 1941 with only one stop between England and West Africa. Other new routes opened are those to the Middle East and others throughout the whole of the Middle East to such countries as Palestine, Persia, Abyssinia, India and across Africa. Most of these routes are secret.

Before the war the combined route mileage of British Airways and Imperial Airways was 30,000 miles. By March 1941 the route mileage of British Overseas Airways—usually called British Airways—25,000 miles. In March 1942 this total had grown to 44,000 miles, and now again it has increased.

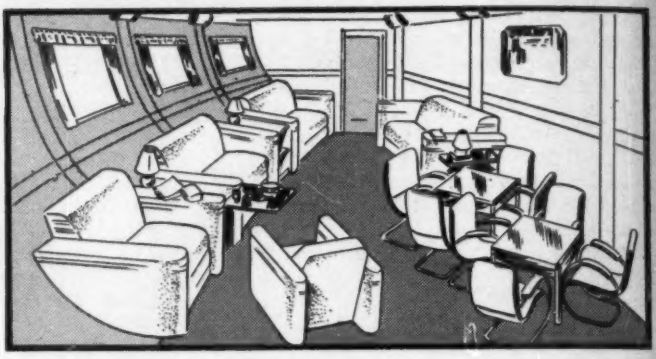
Since the beginning of the war British Airways has been operating entirely for the Government, carrying only Government passengers, mail, freight. Empire mails were suspended on the outbreak of war, and replaced by surcharged air mails. Gradually airgraph services, which have meant tremendous weight saving with quick communication, have been introduced until now they serve almost all of the Empire.

Before the collapse of France, British Airways ferried equipment to the French front—medical supplies, blankets, stores, food, ammunition. Since France's collapse similar equipment and vital war materials have been flown to and from England to all countries to which British airplanes fly. To say that in 1942 British Airways carried some 3,000 tons of Government freight and mails may not seem impressive, though those are British tons and the mails are mainly airgraphs—4,500 airgraphs weighing only one pound. This tonnage has been carried by a fleet of aircraft numbering only about 100, of 17 different types, and only about one-half are civil types, built to carry passengers, freight and mails. The rest are military bombers and flying-boats, modified hastily to carry civil loads.

Compared with the amount of cargo now being carried by hundreds of real transport airplanes of the U. S. Air Transport Command, Britain's record during the past three



Thirty-four passengers could find seats in the big British plane's main lounge.



Women passengers' special interests aren't forgotten. This special ladies' lounge on the big British-planned transatlantic ship alone would seat 20 passengers.

years may seem small. Yet considering the difficulties which have had to be overcome—flying of new routes without peacetime aids, shortage of aircraft, spares and crews and the constant demand for more services as the battle fronts spread—the record is one of which Britain is proud.

Much has been learned which can be applied to peacetime routes. Those peacetime routes and the position of British air transport generally, because of the shortage of transport machines, is causing concern at present. Yet there are signs that within a very short time after the end of the war the British aircraft industry will be producing civil aircraft equal to any in the world.

One of the country's most able designers, A. E. Hagg, has been permitted to plan British air transports, and mention has been made officially of a machine called the York for transport work.

British Airways have done a magnificent job and would have done better had they been given the tools. Meanwhile they have gained much experience on the land and sea routes and over the Atlantic. The RAF Ferry Command has made many flights over the Atlantic, to Moscow, etc., and the Coastal Command of the RAF has flown millions of miles over the seas of the world in the midst of war to Ceylon, North Russia, Iceland, Gibraltar. Coastal Command's operations may not be comparable with regular airline operations, but they involve thousands of routine flights and superb navigation by day and night. All this experience will be brought to benefit British air transport after the war.

Britain is alive to the vital necessity of air communications and of all that can be done by this means, and the war's lessons will be applied.

Wichita Is Honored As Namesake of New Beechcraft Warplane

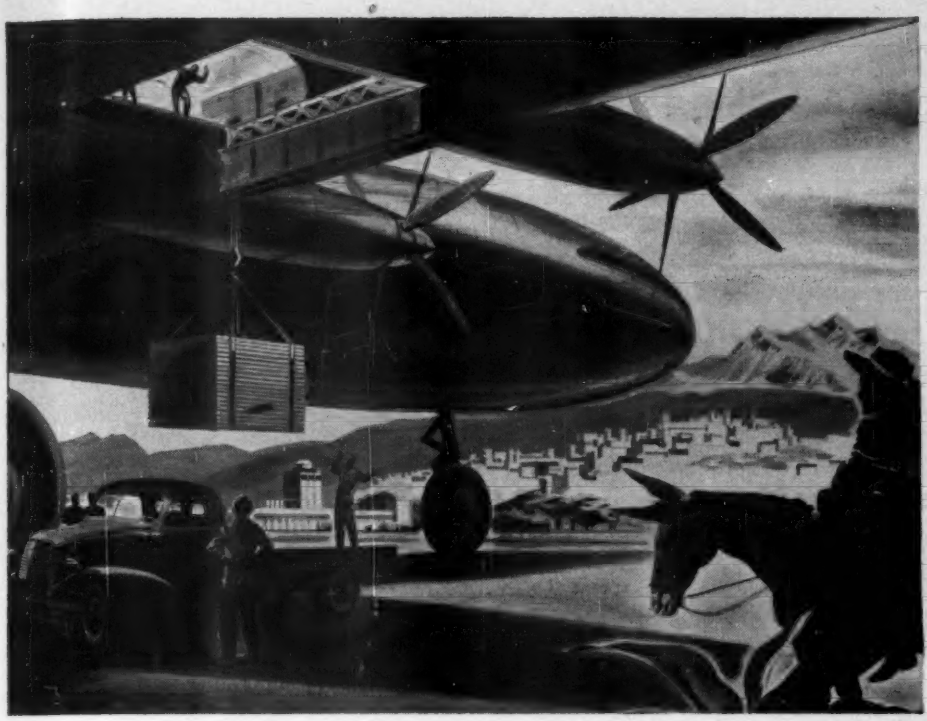
Beech Aircraft Corp. has disclosed that the Beechcraft models now in highest production will spread the name of Wichita and the name of Kansas wherever these planes are in use among the armed forces.

Some time ago the Army requested aircraft manufacturers to assign names to their various models. At that time, Beech officials selected Wichita for the AT-10 Beechcraft twin-engine transitional trainer, and *Kansas* for the AT-11 (Navy SNB-1) Beechcraft twin-engine Bombing Trainer. These two models are among the most widely used and will serve to advertise both city and state.

AA's 'Meatless' Menus Promise Huge Saving

A food conservation plan to release 160,000 lb. of critical meat annually for use by the Armed Forces has been announced by Howard S. Baumgardner, supervisor of food service for American Airlines, after months of intensive menu and recipe research. Results make an entirely new series of complete non-critical menus possible on a system-wide scale.

Daily use of new, non-esesntial food menus, in which emphasis is placed on fowl, cheese and vegetables, will effect critical meat conservation of approximately 51,400 lb. of beef, 32,700 lb. of pork, 31,600 lb. of lamb, 28,000 lb. of veal and 28,400 lb. of ham.



When commercial cargo planes come—many will be CLIPPERS

NOW is none too early to begin planning for Air Freight—because commercial all-cargo planes may come before peace does. Such cargo planes *are already in war service.*

The "know-how" for Air Freight now exists and so do the routes . . . all that is lacking are the commercial transport aircraft themselves.

When these planes are made available it will be only natural to look to Pan American for their efficient international operation, since Pan American pioneered both overseas Air Express and Air Freight.

Cargo-carrying Clippers, utilizing the technical advances made in airplane design in the last three years, will be operated at a cost-per-mile far lower than before the war . . . Shipping rates will, of course, be lowered accordingly.

PAN AMERICAN WORLD AIRWAYS SYSTEM

Wings over the WORLD

PAN AMERICAN CLIPPERS

Who Says It Can't Be Done? It Is Being Done!

Last Public Address of Martyred Army Glider Expert Shouts His Confidence in Gliders for Cargo

When AIR TRANSPORTATION *published in December and January the bulk of the significant addresses at the* AIR CARGO *meeting of the* SOCIETY OF AUTOMOTIVE ENGINEERS, *the Editors thought they had covered the whole conference well. But, too late to catch in the January issue, they discovered one important omission.*

For one of the most inspiring, most challenging addresses of all those made at the Chicago meeting was that of the late Major Lewin B. Barringer, top glider transport expert of the U. S. Army Air Forces, which appears only slightly condensed below.

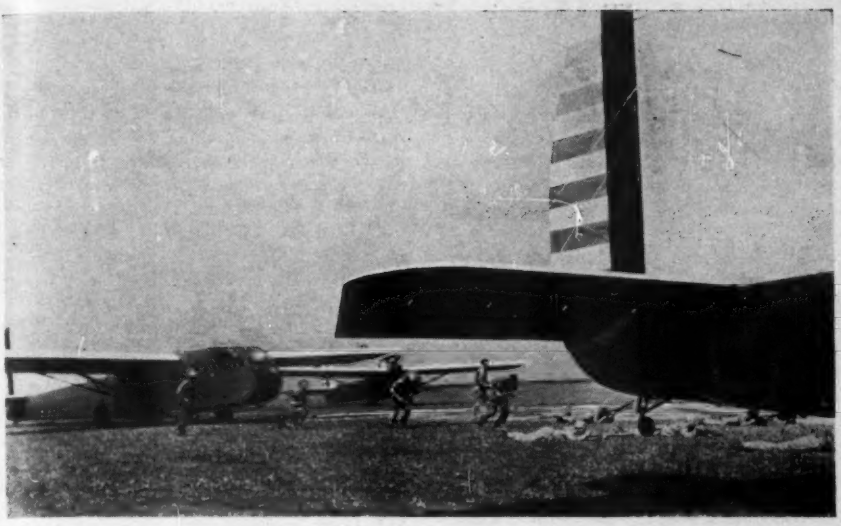
It is aviation's, air cargo's and the nation's great loss that Major Barringer apparently met death while on duty over the Caribbean last month. The plane that carried him and six other officers and two non-commissioned officers on an official mission was reported missing on Sunday, Jan. 24.

By MAJOR LEWIN B. BARRINGER
Chief, Glider Section
Directorate of Air Support, Headquarters Army Air Forces

YOU have probably heard the old and now outmoded saying that you don't have to be crazy to fly but that it helps. This remark has been applied with particular emphasis on those of us who have preferred to fly without benefit of motors. However we feel that we have by now conclusively proved our point by the contributions of gliding and soaring flight in the fields of pilot training, aircraft design and meteorology. Now we are applying the knowledge and experience gained in flying small sailplanes to the development of large troop- and cargo-carrying gliders as potent weapons of modern warfare.

Airplane towing of gliders, which like most important developments in aeronautics was an American contribution, was first done as a method of launching a glider to a height and location where contact with rising air currents could be made for a soaring flight. After its practicability was proven, this method of launching gliders became a necessity at our annual national soaring contests at Elmira, N. Y. On those days when we had either no wind or an adverse wind direction other methods of launching such as winch and automobile towing were inadequate to reach thermal currents.

As a result a considerable amount of towing was done, definite techniques deveolped, and



Illustrative of the cargo-carrying potential of the gliders made today is this Waco CG-4A model used by the Army for personnel transport. It carries 15 fully equipped soldiers like those shown emerging in the background.

valuable knowledge gained—all of which are standing us in good stead today.

As the pilot of the glider on my first few airplane-towed flights my principal impressions were these: First, it was usually an easier method of taking off and one which I instinctively felt subjected the glider to less stress than other methods of launching. Second, the ease of piloting in tow within the design speed range of the glider. Third, the pleasant sensation of continued straight and level flight without vibration and the only noise the swishing of the air past the cockpit.

Flight Seems Effortless

As the pilot of the towing airplane I was most impressed by the almost total lack of impressions. By this I mean that the take off was entirely normal, the run before the airplane became airborne only slightly longer than usual. Once in the air unless the pilot of the glider got some slack in the towline and took it up suddenly, I couldn't feel that I was towing anything at all. My principal concern was to keep a constant airspeed of 55-60 miles per hour to keep within the design speed of the glider. Several times I have towed a clean sailplane and had its pilot when ready release his end of the towline without my knowing it until I looked back and saw he was no longer there.

The towplanes we used at these contests were mostly slow biplanes such as the Waco F and Curtiss Fledgling with from 100 to 185 horsepower. . . .

It is interesting to see what can happen on tow at speeds of 40 to 60 miles per hour with a light wing loading glider. To begin with, the glider takes off well before the towplane. Usual technique has been to climb to about 10 feet, level off and wait for the airplane to take off, then maintain five to 10 feet above it. In cases where the field is limited it is well to pull the glider up to 15 or 20 feet and then dive down, allowing slack in the towline so that the airplane can get off without any drag from the glider. I remember quite vividly once taking off from a small field in the Pocono Mountains in Pennsylvania towing the Chanute sailpline piloted by the late Jack O'Meara. If Jack hadn't used this technique, I would have hit a stone wall with the wheels of my Challenger-powered Curtiss Robin monoplane. As it was, my wheels cleared the wall with inches to spare, as I went out literally between two trees.

In tow in quiet stable air, there is no real problem for the pilot of any glider provided he is towed within the glider's design speed range. All he has to do is a simplified forma-

tion flying, keeping behind and slightly above the towing plane. In rough, unstable air, however, he is apt to have his hands full and soon finds out that he can quickly get into real trouble if he does not keep keenly alert.

The difficulties of towing in unstable air are due to vertical displacement of bodies of air—the warmer ascending air currents we know as thermals and the descending air going down to replace that which has just risen. One advantage the glider pilot has is that the length of the towline—which is usually about 300 feet—gives him time to make the necessary corrections with his controls.

If the towplane flies into an ascending air current the glider pilot sees it rising suddenly in front of him and by immediately pulling back on the control stick can climb up to stay on the same level. If he reacts too slowly, he is apt to find himself being tossed about in the turbulent slipstream of the towplane. With a single-engined airplane with a right-hand engine this is usually below and somewhat to the left of the line of flight. I once found myself with the left wing of my glider in the slipstream and with full opposite aileron control unable to keep it from being pulled down so that I finally had to pull the control knob that released my end of the towline.

If the towplane flies into a descending air current the glider pilot must push forward on the stick to keep from being left far above in a position where he would be exerting a strong upward pull on the tail of the towplane. In general the glider pilot tries to keep slack out of the towline. If he allows considerable slack and then through overcontrolling lets it come out with a snap he is apt to break the towline. . . .

The Heavier, The Easier

These problems of towing in turbulent air become greatly simplified for both the pilots and designers, when we tow heavier gliders at higher speeds. . . .

Now let us see what we have learned from towing our really large gliders. I cannot, of course, go into any detail about these craft, but I can tell you some of the lessons learned from them which will have a strong bearing on future design and use of gliders for transport.

The whole question of the future of large cargo-carrying gliders (which probably should be renamed air trailers) for scheduled air transport is one on which many aeronautical engineers do not agree. Some say that it will be more efficient to design bigger airplanes. *Others feel as I do that with properly designed towplanes and gliders used in ranges up to a thousand miles or so we will be able to transport more cargo by air, for less money and at the same time bring a far greater flexibility to commercial air transport than has yet been possible.* This flexibility will be due to the use of gliders plus the pick-up developed by All-American Aviation and described by Mr. du Pont [in AIR TRANSPORTATION for December 1942]. This combination will allow us to land—as well as launch—cargoes admost anywhere without stopping or even appreciably slowing the prime mover.

Let me point out something to show that others seem to be thinking along the same lines. It is from an advertisement of Western

Major Barringer's Record One of High Distinction

Death ended a short but distinguished career when Major Lewin B. Barringer's plane was lost on Jan. 24 after a takeoff from San Juan, Puerto Rico.

Educated at Haverford School and at Princeton, he learned to fly in 1929, and worked in Philadelphia for Wings Corp. of America as grease monkey, secretary, airplane salesman and pilot instructor.

In 1933 and 1934 he did research work for the Franklin Institute of Philadelphia on early aircraft, in London, Paris and Munich. He began his military flying also in 1933, as a pilot with the 103rd Observation Squadron, Pennsylvania National Guard.

In 1935 and 1936, he was chief of the aerial end of the Joint Iranian Expeditions, doing archeological explorations in Iran (Persia).

Early in his flying career, he became interested in gliders and eventually won the national soaring distance record of 212 miles and the international two-place glider altitude record of 14,960 feet. In 1937-38, he was general manager of the Soaring Society of America and editor of the magazine, Soaring. *From 1939 until joining the AAF in 1941, he was assistant to the president of the Newark Boxboard Co.*

Well known among glider enthusiasts is his book, Flight without Power.

Air Lines which I cut out of the Los Angeles *Times* when I was in California on Nov. 19. The heading is *"Shifting Air Freighters at Greenville . . . in 1942.* The 4,800-horsepower tug cuts off No. 3 glider 10 miles back to soar (it should be 'glide') for a landing unassisted . . . then swoops down over the village airport and, without stopping, smoothly fishes another winged box car into the air, on its way to market."

Having been in commercial and military aviation enough years to see many new developments succeed in spite of convincing arguments that they could not be done, I believe that *we won't really know what we can do with large cargo gliders until we try them.*

Fortunately, we already have an unusual opportunity to base future speculations on present experience. You have probably all seen photographs in *Life, Flying* and other magazines of the Army's CO-4A 15-place glider. This big motorless aircraft, large as a twin-engine transport or bomber, is currently in use at our advanced glider schools in training army glider pilots.

All of these gliders were ferried by air long distances cross country from the factory to the schools. On these flights they were towed, as they now are in training flights at the schools, by the C-47 airplane which is an Army version of the Douglas DC-3. Pilots of these airplanes have been required to keep logs recording at regular intervals all items of engine performance.

From full-load, long distance flights where both towplane and glider carried maximum weight cargoes, we have learned some very interesting facts on what we have to pay in lowered cruising speed and raised fuel consumption for increased payloads.

Real Cargo Craft To Come

But first of all, let me point out that our Army glider was designed for one purpose and one purpose alone—that of landing troops with their weapons slowly and safely in small fields. *Obviously it was not designed specifically for cargo transport and can be considered definitely inefficient for this latter job compared to gliders we can and will build to haul air freight.*

To begin with, its gross weight wing loading is only slightly over eight pounds per square foot. Its usual towplane, the C-47, has a wing loading of twenty-eight pounds per square foot—certainly two totally dissimilar and unmatched aircraft to be tied together in flight!

Fully armed airborne infantrymen leap from their glider to go into battle maneuvers. And gliders like these, says Major Barringer herewith, are but a foretaste of what cargo gliders of the future will be.

Now let us see what happens when we tow this glider with this airplane cross-country. In each case there was carried the maximum fuel load for the particular range, the remainder of the disposable loading being made up of cargo. With cruising speed reduced approximately 25 per cent and fuel consumption increased 20 per cent for a range of 300 miles we found an increase of cargo capacity over that of the airplane alone of 46 per cent. For a range of 500 miles there was an increase of 50 per cent. For a range of 800 miles the percentage gained rose to 50 per cent.

When added to these facts we consider the cost of the glider being less than one-sixth that of the towplane, some of the possibilities of gliders for transport become apparent.

With a large glider or air trailer designed specifically for this use and matched in design and wing loading to a towing transport plane we can reasonably expect payloads increased over 100 per cent with decrease in general efficiency of operation of the airplane alone of only 10-15 per cent.

It is interesting to note present trends in design. New transports are on the boards with lower wing loadings for small field operations. New gliders are under consideration with much higher wing loadings. When the two meet and we have transports designed to tow gliders as well as gliders designed to be towed by these transports we will begin to have some of the efficiency we are looking for.

However, I wish to emphasize that the important question for us now is not whether we can or will carry all our cargoes in the future in transport airplanes or will carry some of it in airplanes plus gliders. The important question is this—*if there is a possibility of substantially increaseing our air cargo capacities during this war by towing cargo gliders behind our cargo airplanes we should give the problem very close study. From what we have already accomplished, from what we are now trying out, and from what we are planning for the near future, I can best repeat the words of a slogan, cut from a magazine advertisement and now hanging over my desk in Washington:*

"WHO SAYS IT CAN'T BE DONE—IT IS BEING DONE!"

Footnote on Gliders at War

While strictly an offensive instrument, the troop glider isn't exactly duck soup for enemy fighters to use as targets to be picked off at leisure, according to Pioneer Glidermaker Waco Aircraft Co. Since Waco's first XCG-3 nine-place glider was produced, a way has been found to make the glider an exceedingly difficult target. When an enemy fighter attacks a glider train—unless he has delivered previous attacks and possesses the good fortune to have been able to fly away under his own power—he is due for a rather interesting, and very possibly fatal, few minutes of entertainment.

Gliders can cut loose from the train instantly, kick up the spoilers atop the wings and lose 300 to 400 feet of altitude before the fighter can get the craft anywhere near his sights. From that point on, it is simply a matter of an almost vertical dive, turning, twisting and performing such unsportsmanlike maneuvers as are necessary to become a difficult target—all of which causes the fighter pilot no end of chagrin. The whole glider train can be on the ground *in a matter of seconds* and the only effective attack from the fighter is strafing.

Experiments have proved the feasibility of glider pick-up from a cargo ship flying overhead. This makes possible the salvaging of gliders from fields that otherwise would prove too limited in area or too rough in terrain to permit towing off by the tow ship. In a matter of minutes the grounded glider can be placed in take-off position and picked up by a ship overhead flying at a hundred miles per hour or more. This is an adaptation of the air mail pick-up methods now executed as a routine service daily. [*See "Gliders and Air Pickup" by Richard C. du Pont,* AIR TRANSPORTATION, *December 1942.*]

Back in June, 1941, when Waco Aircraft Co. was asked to design and fabricate two experimental glider models, it very gladly accepted the challenge. Glider manufacture

No resemblance to the flimsy, kite-like gliders of yesterday are the kind the Army is already receiving in large but censored quantities from manufacturers like Waco. Here's a view inside the Waco CG-4A that gives an idea of its cargo- as well as personnel-carrying capacity.

was not new to Waco nor was mass production. The new program simply called for a bigger glider than the man in the street could conceive and the program of mass production was merely a matter of enlarging upon the procedure followed in producing the now famous Waco UPF-7 CPTP trainer.

Experimental gliders were being delivered and approved before the year was cut and then Waco really went into production. Not only was it asked to produce all the glider units its capacity would allow, but leading aircraft manufacturers from coast to coast were soon fabricating these new mediums of transport in outstanding quantities under Waco engineering guidance.

The Waco CG-4A 15-place glider is fabricated entirely of steel tubing, fabric-covered. Wings are wood construction. Subcontractors are former furniture manufacturers, piano factories, woodworking shops, cabinetmakers and others that the average person hardly visualizes as co-manufacturers of such an important offensive weapon.

A giant cargo ship towing one or more gliders from factory to base is fast becoming a commonplace sight over many American towns and cities. As time goes on, such a scene will become worthy of only a glance as an American on the street hurries to his war production job.

In the not too distant future, when these same gliders are glimpsed overhead "somewhere across the sea" the scene will be reversed. To those suppressed souls in occupied territories, they will be a revelation; to oppressors in the same territories, those strange birds on the horizon will become realistic examples of the handwriting on the wall forecasting their doom to come.

PETER N. JANSEN has been named general manager of the airplane division and J. P. DAVEY general manager for the Ohio plant of Curtiss-Wright Corp.

NORMAN B. WALTON has been promoted to executive vice president of the Canadian National Railways.

Winter emphasizes the fact that *there is no substitute for AIR TRANSPORTATION in our war effort . . .*

AMERICAN AIRLINES *Inc.*

ROUTE OF THE FLAGSHIPS

Air Cargo Goes To Washington

Gathering Storm in Congress Follows Proposal for Committee To Plan Air Transport's Future

A FIGHT *is brewing in Congress—in fact, has already boiled over in the House. Many forward-looking Representatives see a vast need for a standing committee of the House to help pave the way for the postwar future of U. S. air transport in a world sure to be violently competitive in the commercial air. But the long powerful House Committee on Interstate & Foreign Commerce seems dead set against it, seems to hold that it can do the job itself along with watching the future of railroads, ships, pipelines, trucking.*

On the evidence so far, AIR TRANSPORTATION *sides warmly with the advocates of a standing committee for air transport. But to put the proposal squarely before its readers,* AIR TRANSPORTATION *here publishes in full the report to the House on postwar air needs, made last month by a special committee to investigate air accidents headed by Representative Jack Nichols, of Oklahoma. Further discussion of both sides of this vital issue will appear in later issues.*—THE EDITORS.

WE shall see the true beginning of the air age after the war. The aviation industry and the Civil Aeronautics Administration will have to be ready.

Air transport, which before the war was breaking its own records month after month, will be the first to show evidences of the upsurge in peacetime air activity. The large-scale use of air transport craft to carry passengers and cargo for war purposes will provide a ready-made reservoir of pilots and planes for diversion to air commerce.

Transportation of air cargo in special planes is a war infant which will find ready application in peacetime, both on domestic routes and overseas lines. The aerial supply lines over which materials are now flown to American troops abroad will become air commerce routes both for passengers and cargo. Domestic passenger and mail craft will find themselves flying the airways with cargo ships.

The carriage of all first-class mail by air, about which we were beginning to hear before the war, may come into existence to further swell the loads of air transport craft.

The desire of the private individual to own and fly his own plane for business and pleasure has long been known to the aviation industry. Serious deterrents to the large-scale private use of aircraft have been the cost of learning to fly and the expense of purchasing and operating a plane.

After the war we shall have many thousands of released military pilots anxious to continue flying for pleasure and business. There will be many thousands of others who wanted to get into the war as flyers but were unable to gain this objective before the war's termination. There will be other thousands who were given a taste of aviation through ground jobs in the military forces who will want to learn to fly.

This will mean a tremenduous potential market for the manufacturers who can produce the types of planes best suited for private use. The lessons learned from production of military aircraft, together with the possibility of mass sales will in all likelihood

make it possible for plane prices to be brought within reach of the many thousands of potential purchasers who have not in the past been able to afford their own planes.

Safety and ease of operation will be strong sales features in the post-war market. Many technical developments which were available before the war, and others which have come into existence during the war, will contribute to the design of the "family airplane."

The Civil Aeronautics Administration is responsible for the inspection and certification of all civil airmen; engineering approval of new types of aircraft, accessories, and appliances; inspection of air-line operating and maintenance procedures; establishment and operation of the Federal Airways System; and many other kindred duties, will be faced with the immediate task of gearing its activities to the volume production and use of civil aircraft.

It is evident that it will not be possible for Federal inspectors to maintain close supervision over each pilot and each aircraft. Further delegation of inspection activities to flight examiners appointed from the industry will undoubtedly be necessary. Civil Aeronautics Administration inspectors, in additional numbers, however, will be required to supervise the activities of the flight examiners.

Additional burdens, which cannot be delegated, will fall upon the aircraft engineering staffs of the Civil Aeronautics Administration as many new and radical developments in aircraft design, engines, and accessories can be expected. Each will have to be given exhaustive tests before it can bear the Civil Aeronautics Administration stamp of airworthiness.

The Federal Airway System, over which all air traffic flows, will have to be overhauled in order to handle a greater volume of traffic. It will be necessary to realine many of the airway segments which have been rerouted to bypass military areas. A number of new developments in air navigation radio aids are ready for large-scale installation—such as ultra-high-frequency radio ranges, instrument landing systems, and other totally new devices, developed because of war necessity, will have to be analyzed as to applicability to airways operations and, if applicable, developed and produced for service installation.

In congested areas it may be necessary to establish parallel routes for private flying as the volume of passenger, mail, and cargo traffic reaches the limit of accommodation by airports and traffic control facilities.

It is believed that the organization pattern of the C. A. A. is sufficiently flexible to accommodate itself to post-war conditions without serious difficulty. The size of the organization will depend upon how much of its field activities can be further assigned to the industry, such as the inspection of aircraft and airmen, for example. Additional problems will be created, however, which may require an expanded organization.

The enforcement of civil air regulations with respect to air traffic on a much larger scale will be one of the problems. It may be possible, however, through cooperation by local and State law-enforcement bodies, to eliminate the necessity of supporting a greatly increased staff for this purpose.

Additional personnel will be required for the revamping of the Federal Airways System soon after the war, and further increases in manpower will be necessary to provide for the new volumes of traffic which will be flowing over the airways.

Planning Future Air Traffic Control Service

It is anticipated that within a few years after peace returns to the world the air lines of the United States will be carrying 20,000,000 passengers a year and half a million Americans will be flying their own planes. Regular freight planes will be flying the airways and all first-class mail will go by air. There will be feeder air lines to smaller cities and pick-up service to the villages.

During the fiscal year 1938 the airway traffic control centers of the Civil Aeronautics Administration handled approximately 300,000 aircraft movements. During 1941 the number handled was over 1,500,000, in 1942 over 6,000,000, and during 1943 it is expected that this service will control in the neighborhood of 15,000,000 aircraft movements. The year 1950 may see the 60,000,000 mark reached.

With the magnitude of the air traffic control problem rapidly becoming greater, the responsibility of the Federal Government to provide adequate air traffic control service is constantly increasing. This service must be developed not only to meet the needs of private and commercial flying, but as well to serve the aircraft of the armed forces. If this responsibility is to be met and the future problems of air traffic control are to be solved, careful planning and preparation are essential.

Air Carriers and Pilots

Your committee has been very grateful for the cooperation which has been accorded to it by the Air Transport Association and the Air Line Pilots Association during the conduct of its investigations. Pilots and management have been equally cooperative in assisting the committee to ascertain the causes of air accidents and in suggesting to us what steps might be taken to correct deficiencies in operation and in improving the safety of air commerce. As an example of the attitude expressed to your committee on many occasions, we quote from a letter received by the chairman of the committee from Bruce A. Braun, vice-president in charge of operations, Chicago & Southern Air Lines, Inc., Memphis, Tenn., dated November 4, 1942:

> *We had the pleasure of reading your committee's report on the accident at Salt Lake City in which Captain Fay of United Air Lines crashed. We do appreciate the work that was done by your committee and yourself and if more of these investigations were made with the same thought in mind that your committee had we believe constructive action could be taken and that flying could be made safer.*

We deeply regret that it is impossible for your committee to show in detail the tremendous services which have been rendered by the air carriers and by the members of the Air Line Pilots Association in the furtherance of the war effort. We believe that it would be gratifying to the Congress of the United States to know to what extent commercial aviation has contributed toward the successful prosecution of the war. The purposes of the Civil Aeronautics Act of 1938 were:

> *The encouragement and development of an air transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, of the postal service, and of the national defense.*

When the war is over and it is possible to fully appraise the work of civilian pilots and of the air carriers, we believe that it will be fully established that one of the soundest investments which the Congress of the United States has made in this era has been the appropriations provided for the development of civil aviation.

Because of the secrecy in Army Air Force operations, your committee was advised by the War Department that it could not at this time detail the contributions which have been made by the air carriers and civilian pilots. For many years Col. Edgar S. Gorrell, president of the Air Transport Association, studied the uses and adaptations which might be made of the air carriers to fully serve the United States in the event of war. A great deal of credit is due to Colonel Gorrell for the results which have been attained.

Without divulging confidental information your committee is able to state that a very large percentage of the equipment of the air carriers has been diverted to military uses. In addition the air carriers have trained radio operators, navigators, multiengine pilots, and mechanics. They have also contributed hundreds of specialists to the military ranks, including some of the ablest executives of the air carriers. Substantial services have been rendered in the shops of the air carriers to military aircraft.

During our investigation it has been the privilege of your committee to meet a great number of the pilots and copilots of the air carriers. Your committee has found them to be a very able and patriotic group. The contribution which these pilots have made, and are making, to the successful prosecution of the war is again a matter of military secrecy. Suffice it to say that voluntarily they have increased their hours of service from 85 to 100 per month to assist in every way possible the successful termination of the present conflict. To a layman who is unfamiliar with the stress and strain of operating transport planes, 100 hours of active flying per month may not seem to be an impressive figure. To your committee the additional 15 hours of flying per month by every air-line pilot of the United States constitutes a very substantial contribution to the war effort.

Post-War Aviation

A few statements recently made by aeronautic experts indicate their views concerning the developments of civil aviation which may be expected in the near future.

Glenn L. Martin says his firm can build a 250,000 pound flying ship able to carry 80 tons of bombs or cargo to Europe at a speed of more than 300 miles per hour. Eight thousand, three hundred of such planes could move tonnage, in the course of a year, equivalent to the yearly freight capacity of the entire merchant marine of the world; 45,000 would

be the equivalent, in carrying capacity, of this country's 1,900,000 freight cars.

Grover Loening predicts 300,000 pilots, millions of mechanics, and thousands of highly usable aircraft at the end of the war. He declares that at least one-third of the planes constructed under the present war program will be magnificent cargo carriers averaging a load of 10 tons of freight or passengers at a cruising speed of 200 to 300 miles per hour. He states further that air transport will invade the heavy cargo field of the international shipping companies. Fifteen of the 80-ton planes now being manufactured, each carrying 20-ton loads, could do the work in 1 year of one slow cargo vessel of the average 6,000-ton capacity. Twenty-one such planes would do the work of the fast new-type vessels of the 7,000-ton capacity.

Maj. Alexander P. de Seversky states that in his opinion, the ultimate round-the-world aircraft range of 25,000 miles is at most 5 years away. Present operational radius will be expanded three to five times in the next few years.

Igor Sikorsky believes that 10 years after the Second World War is won we will see hundreds of short-run helicopter bus services and hundreds of thousands, perhaps millions, of privately owned direct-lift machines carrying Americans about their business and their pleasure. He predicts that within a decade after the war we shall enter the new air age in which the helicopter will contribute toward the greatest prosperity our people, our country, and the world have ever known.

These experts undoubtedly think that the possibilities of air transportation are practically unlimited. After the war, there will be millions of persons who will purchase things they have never bought before. No people and no market will be inaccessible. Air traffic will affect what they eat in China and India—their living conditions—the hours they work. It will industrialize small and remote places with wealth that has not been successfully tapped because of travel difficulties. In turn, all of this air activity the world over will have the effect of increasing the intensity of air travel over the United States.

W. A. Patterson, president of United Air Lines, said in November 1942:

> *Actually, 15 years ago, public confidence in and acceptance of the airplane was at its lowest ebb. Now, however, the pendulum of public opinion seems to have swung from that extreme to the other.*
>
> *Those who have had confidence in the future of aviation in years gone by, now see that confidence supported by actual performance. As an instrument of destruction and as a medium for the transport of men and materials of war, the airplane has become tremendously important. Public opinion has reacted quickly to this situation and is now headed in the direction of extreme enthusiasm over the post-war future of the airplane.*

Mr. Patterson emphasized his personal "great confidence" in the post-war future of aviation and predicted that, in addition to its major gains in passenger traffic, airplanes will carry all the first class mail of the future, along with a large share of express package traffic. He added—

> *The volume of domestic air cargo could increase one-hundred-fold and yet capture only one-tenth of 1 per cent of the freight ton-miles now carried by the American railroads.*

We must remember, however, that the growth of air transportation and flying activities in general have been very difficult to predict and that most of the predictions made in the past by experts after considerable research and study have fallen short of actual expansion.

Passenger Traffic

The National Resources Planning Board in its report on Transportation and National Policy (transmitted to Congress by the President in November 1942) based its passenger traffic forecast on the following quotation from the report on Transportation and National Policy:

> "In the last 10 years, to the end of 1940, revenue passenger-miles flown on scheduled domestic air lines have increased from less than 1 per cent to approximately 12 per cent of Pullman passenger-miles. While much of this air traffic presents a diversion from rail and highway travel, a substantial portion undoubtedly is genuinely new traffic, brought into being by the acceleration which air transportation affords. * * *
>
> "A large number of factors have contributed to the growth in passenger traffic, among them the vastly increased comfort of air travel, the more frequent schedules, greater speed, fewer cancellations or delays, better traffic organization and promotion, greater reliability. Most important

ot all has been the remarkable advance in safety; in the last 5 fiscal years there has been an accelerating rate of improvement in operating safety, particularly on domestic routes. * * *

"Thus, in 15 years from the start of scheduled domestic air transportation service air lines have reached a point equal to the level of safety attained by rail carriers 70 years after the start of rail transportation.

"Extrapolating the general safety curves for both air and rail carriers suggests that the two safety trends will merge by 1950.

"Since accidents in any form of transport obviously can never be completely eliminated, it appears reasonable to predict that within the next decade the safety factor will cease to be a serious deterrent to air travel on the part of the vast majority of travelers.

"With increasing public acceptance, the factors which have so far contributed most to the growth of passenger traffic will decrease in relative importance and the question of fares will become increasingly significant. * * *

"Pullman traffic in 1939 approximated 8.5 billion passenger-miles at an average rail and Pullman charge of slightly over 3 cents per mile. Average air-line costs per capacity-seat-mile, we have seen, are tending toward 1½ to 2 cents and load factors toward 60 per cent. Hence, an average air-line charge not much, if any, above 3 cents per mile appears to be in sight within a predictable future.

"Taking into consideration savings in meals, hotel bills, and incidentals, such a rate in many instances would be considerably lower than the present cost of Pullman travel. It might well be argued that with no great difference in safety, with equal convenience, and with roughly equivalent rates, the great time advantage of the airlines will ultimately attract substantially all first-class long-haul passenger traffic to air travel. * * *

"As a generous margin of conservation, let us assume that within the next decade or two air travel in the United States will assume proportions equivalent to approximately 70 per cent of present-day Pullman rail travel, or about 6,000,000,000 revenue passenger-miles.

The National Resources Planning Board then made the forecast that 20,000,000 passengers will be transported annually some time between 1950 and 1960.

Robert H. Hinckley, former Assistant Secretary of Commerce, forecast that 20,000,000 passengers will be transported 2 years after the war; say, in 1946 or 1947.

Freight, Express, and Mail Traffic

The development of air freight will be determined by two factors, cost and speed.

The National Resources Planning Board says on this subject:

> *A plane designed strictly for cargo and mail traffic, on the other hand, may be able to increase the per cent of pay load to gross weight very substantially, probably to 35 or 40 per cent. A higher landing speed will be permissible where passengers are no longer involved, which in turn means a larger pay-load capacity. These factors, together with other changes in operation practice, may well result in an ultimate significant operating cost per cargo capacity-ton-mile approaching 5 or 6 cents. To this would have to be added, of course, the air line's overhead, equivalent to perhaps 2–2.5 cents per capacity-ton-mile; as well as such pick-up and delivery expenditures as are inherent in handling cargo traffic.* * *
>
> *Applying these data, we find an average possible charge for air freight of 18 cents or less per ton air-mile. This is roughly equal on an equivalent basis, to the present charge for first-class and parcel rail express shipments.*

Under these conditions the National Resources Planning Board estimates that air freight may exceed 600,000,000 ton-miles annually some time between 1950 and 1960.

Such authorities as Grover Loening have predicted, however, that cargo planes of a new type with a gross load of 200,000 pounds and a pay load of 40 tons will bring operating costs down to under 4 cents a capacity-ton-mile.

Furthermore, air freight will not have to depend on ground transportation. Airplanes can be used for local pick-up and delivery—to and from a store to a customer's backyard. There undoubtedly will be a system of freight airports, located and designated exclusively for air cargo, separate from passenger airports. In addition, many industrial companies will have their private airports adjacent to

their plants. The development of gliders and glider pick-up will make possible practically universal air-cargo service through the use of small and cheaply constructed landing areas.

Thus, after the war, huge quantities of cargo will be shipped by air, not only because it is faster and requires no transfers, but also because it will be cheaper.

Conclusions

Your committee is convinced that the proper utilization of aviation facilities and of aeronautical enterprises developed in the United States will have a marked effect on the economic recovery of our country at the end of the war. Because of the dislocation of many other industries, it will require a long time to reestablish them on a productive basis. The loss of hundreds of steamships during the war will retard the restoration of our foreign commerce. Cargo- and passenger-carrying aircraft, however, will be in full production and will be available for immediate use in international air commerce to carry to the world such of our merchandise and produce as is then available for export. The fullest utilization of the aeronautical development of the United States requires that adequate provision be made by the Congress for those Government agencies having charge of civil aviation. By the same token a permanent committee of air-minded Congressmen should be appointed in the House of Representatives to work with those Government agencies for the protection and development of interstate and foreign air commerce.

JACK NICHOLS, *Chairman*,
RICHARD M. KLEBERG,
HERRON PEARSON,
EVERETT M. DIRKSEN,
CARL HINSHAW.

Clare Boothe Luce Puts Question On Front Pages All Over Nation

As AIR TRANSPORTATION went to press, the questions first brought into the news by the committee report reprinted above were flashed on front pages across the land by the fiery speech made in the House on Feb. 9 by pretty, outspoken new Representative Clare Boothe Luce, Republican, of Connecticut.

The international-minded wife of *Time-Life-Fortune* Publisher Henry R. Luce told the House that American control of the air, not the "freedom of the air" urged by Vice President Wallace (and echoed in these pages by President Croil Hunter, of Northwest Airlines, as the reader will see on pages 30-32) must prevail after the war.

Mrs. Luce's prestige as a playwright, foreign correspondent and observer of the international scene (*Europe in the Spring*, 1940) enabled her to give to Representaetive Nichols' project for a standing aviation committee in the House by far its greatest public boost so far recorded. What's more, it served to bring into the white glare of the newspaper front page a subject that thus far had been far back inside the papers and had received serious thought only in the aviation industry and among those closest to aviation itself.

"Mr. Wallace's warp of sense and his woof of nonsense is very tricky cloth out of which to cut the pattern of a postwar world," Mrs. Luce declared. "A desire for international peace inspires Mr. Wallace's plea for 'freedom of the air.' As 'freedom of the seas' prevented neither the first World War nor the second, there is no reason to suppose that 'freedom of the air' would prevent World War III."

"We were not elected," she continued, "to preside over the liquidation of America's best interests, either at home or abroad. The sky is the limit of those interests. The time is now."

For an airline president's view of 'freedom of the air,' see pages 30-32

For an up-to-date view of Britain's air progress and planning, see pages 5-9.

Follow This All-Important International Issue
in
AIR TRANSPORTATION
watch for the March issue

Rubber Flies Northward from Central America In Army's Cargo Planes

Captured Enemy Supplies Plus Nicaraguan Yields Arriving Here At Rate of 100 Tons in 60 Days

RUBBER has become one of the principal cargoes on air routes from Central America. More than 100 tons of crude rubber have been flown to the U. S. from Central America alone since early in December, 1942.

Utilizing space in northbound planes, the crude rubber is coming in increasing quantities from airfields situated deep in the American tropics. More than half of the airborne tonnage has come from the Republic of Panama. Most of the remainder has been from the Canal Zone and Nicaragua, with a few tons from Guatemala.

From the Canal Zone the rubber thus far brought is seized enemy rubber, now put to work to help defeat the Axis. The remaining crude rubber flown in is in the form of "tree scrap" from the wild Castilloa trees of Central America.

Tree scrap is the coagulated latex that collects at the base of the Castilloa tree after it is tapped in herringbone fashion. Of a lower grade than the smoked sheets of Castilloa prepared from more carefully collected latex that has been first screened free of impurities and then cured by smoking, the tree scrap brings the basic Rubber Reserve Co. price of 33 cents per lb.

Throughout the Castilloa region the rubber gatherers assemble tree scrap and bring it to the airfields. Army planes returning north from the Canal Zone pick up the scrap rubber in 100-pound bags and bring it to San Antonio, Tex. A plane may load as much as 4,000 lbs. of scrap rubber along the northward route, depending on space available.

The tree scrap now being flown out of Central America represents only a fraction of the overall rubber development in those countries. The area contains millions of wild and semi-wild Castilloa trees, with many operations being conducted according to modern methods of screening and curing the latex to produce a higher grade of crude rubber. Thus the tree scrap collection is only the fringe of a vast development of Central American rubber production expected to yield long-range benefits as well as furnish an immediate wartime source of this strategic material.

Ranging the tropics for every source of rubber, the chicle workers of Central America are also gathering Castilloa rubber. In Guatemala and Yucatan, planes that have been bringing chicle for chewing gum from inaccessible forest regions to river ports are now serving to bring out Castilloa rubber as well.

The Central American republics are among the 17 American rubber-producing countries that have agreed to sell their exportable surplus of rubber to Rubber Reserve Co. The contracts, running to 1946, set prices ranging from 33 to 45 cents per lb. and provide for long-range development of the rubber industry in the Western Hemisphere. Other planes throughout the vast Amazon River basin area are engaged in handling crude rubber from the Hevea tree in the largest rubber program initiated since the wartime loss of Far Eastern rubber sources.

RUBBER TAKES TO THE AIR, U. S.-BOUND

Photographed in January at an unnamed airfield in Nicaragua is a sight for sore wartime eyes: sacks of crude rubber "tree scrap" from Nicaragua's Castilloa trees being loaded into a U. S. Army cargo plane for transport to the U. S. Other scrap rubber is similarly picked up at fields in Panama and Guatemala, flown to San Antonio by Army transports returning "light" from Latin American missions.

One step closer to realization comes the real Air Cargo Age as Lockheed's Constellati[on] take[s]

Constellation T[ke]

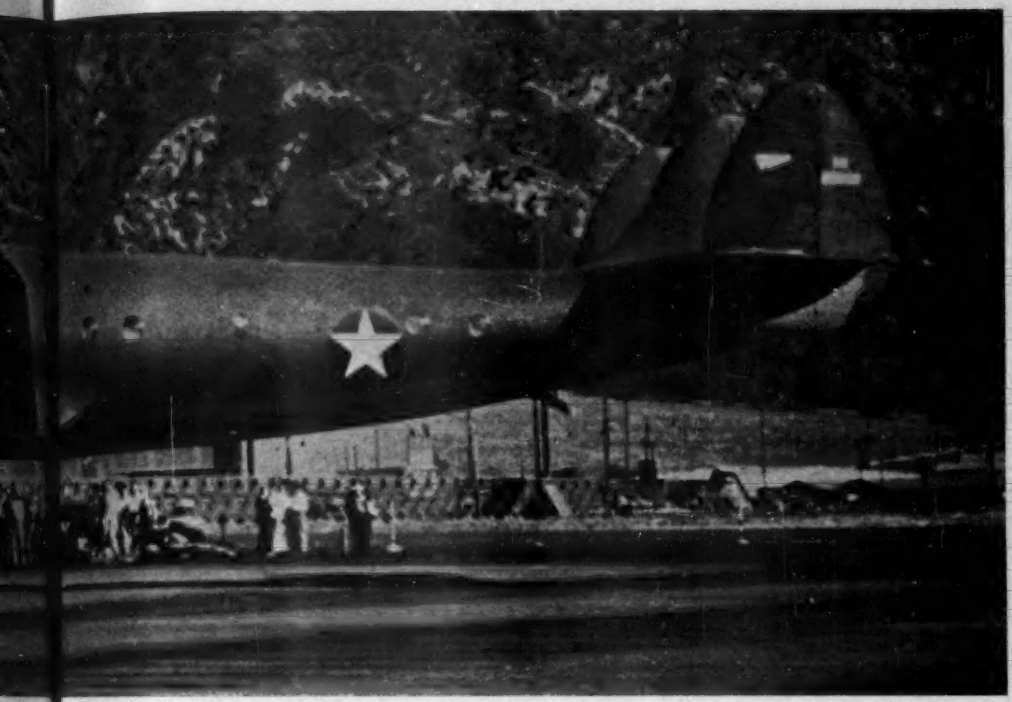
Hughes-TWA Dream of Luxury-Liner Become[s Lock]

AVIATION people had been talking about it for months, if not years. Long before Pearl Harbor, TWA's President Jack Frye and world-circling Howard Hughes had put their heads together, and Lockheed, famed for fast transports, bombers and fighters, had gone to work. Since Pearl Harbor the talk had been hushed and guarded, and as recently as last October, the only photo of the promised Lockheed *Constellation* that AIR TRANSPORTATION could publish was one of a wind-tunnel model—a tiny miniature of the giant that was on the way.

But last month, on Saturday, Jan. 9, *Constellation* came out from under her wraps. Not for TWA, not for Hollywood stars and captains of industry in a hurry to get from coast to coast in nine hours, but for war—and for whatever cargoes of men or materiel or both the U. S. Army Air Forces wanted her to haul.

Newspapers from New York to the Pacific front-paged Lockheed's official, War Department-censored release. And—censorship or not—all hands seemed to agree that *Constellation* had been worth waiting for.

To shippers who may have been doubting what CARGO-BY-AIR in the postwar world will amount to—and fearing what it will cost—*Constellation* had a lot of ready answers, even in the meager performance data that the



stellati…kes its bow, week after New Year's Day, near the Lockheed plant in Burbank, Calif.

T…kes to the Sky

…me… …ockheed's Entry for Carrying Cargoes of War

Army permitted Lockheed to release. Now, it seemed that some of the aviation industry's ultra-conservatives might have to revise their estimates on AIR CARGO costs in the face of the amazing fact that *Constellation*, carrying the weight equivalent of more than 60 men (how much more than that nobody knew) can soar to a cruising level of some four miles in the air and stay there on a fuel of only one gallon to the mile.

Tomorrow's transportation, here and ready to meet today's military emergency by flying Great Circle courses above the weather in a different world, to the battle fronts of a global war . . .

The heaviest load, flown over the longest distance in the shortest time, with the greatest safety and at the least cost in fuel and dollars.

The largest, fastest and most powerful land-based cargo or transport plane, in a wartime garb of Army camouflage . . .

Such is the condensed story of the big but practical ship, newest aircraft in Lockheed's long list of record-breakers with star names. Designed and built for Transcontinental & Western Air Inc., she will be turned over to the Army by TWA for war duty.

At a top speed comparable with the cruising speed of fighter planes it will fly a light tank and its complement of troops across an ocean. *Faster than the Japanese Zero or any four-engined bomber now in active service, Constellation* will cross the continent in less than nine hours, or fly to Honolulu in twelve.

In its future peacetime role as a high-performance luxury liner of the air oceans it could carry 55 passengers and a crew of nine nonstop from Los Angeles to New York in record time—or under today's airline procedure with frequent fueling stops, it could fly 60 passengers across the country *for less than railroad rates,* says Lockheed.

Its four 2,000-horsepower Wright engines, mounted in an airframe of new aerodynamic efficiency, will lift a heavy load. At cruising speed at about half power, *Constellation* is approximately 100 miles an hour faster than standard air-cargo or airline ships of today, while eliminating most of the time lost in fuel stops.

This unique performance is possible, with new comfort to passengers in transport duty, because she is able to cruise through thin air at 20,000 feet—above 90 per cent of all rough-air weather disturbances, and with ample reserve fuel to fly around most of the others. The pressurized cabin, heated or cooled according to climate and always air-conditioned, will maintain the air density of the 8,000-foot level, and in case of need *Constellation* can rise comfortably to 35,000 feet—almost seven miles.

Engine Failure No Peril

Partial engine failure would have little effect, for the ship will maintain 25,000-foot altitude on three of its engines, and will fly at 16,500 feet on only two. This reliability, together with its exceptionally long range nonstop flight, should enable *Constellation* to blaze new travel routes.

It will fly Great Circle courses which bring Chicago closer to parts of Europe than is New York, or trace a shorter route from San Francisco to Singapore, or wheel across the North Pole to bridge the world more compactly than by the Equator. Its speed and range will link the three Americas into a sleeper jump; its 8,000-horsepower eagerness to carry a useful load seem certain to draw new maps of military logistics and intercontinental commerce.

Its economy is a long stride forward. There are bigger planes, and planes which will carry more cargo, but none so far built will "get there firstest with the mostest," especially at *Constellation's* economical operating cost.

"This airplane is the greatest contribution to air transit yet made by Lockheed," said Lockheed's President Robert E. Gross. "It is designed and built to do a necessary job as well as it can be done today, happily timed for the war cargo emergency which confronts us, and for the reconstruction to follow the victory we must first win."

Has 'Lightning' Features

The performance of the *Constellation* stems from its aerodynamic shape, perfected after exhaustive research by the Lockheed "conference system" of engineering which pools the efforts of a great engineering staff under Hall L. Hibbard, Lockheed vice president and chief engineer, and C. L. (Kelly) Johnson, chief research engineer. Its speed, range, and load-lifting ability all are inherited directly from the Lockheed *Lightning* (P-38) fighter, which for more than two years has remained the fastest military airplane in the world.

Constellation's wing is an enlargement of the *Lightning's,* embodying the same high lift, low drag, and other flight characteristics which are being proved over the battlefronts. It permits use of Lockheed Fowler flaps to reduce landing speed to a safe level (77 miles an hour), and also a new "maneuvering flap" which gives *Constellation* three distinct sets of performance characteristics. With flaps telescoped into the wing, the ship is a speed and distance champion; the maneuvering flap increases the lift of the wing so that the *Constellation* will climb rapidly out of a short field, or maneuver at slow speed during icing conditions or bad weather; and the landing flap brings it in to the airport at reasonable automobile speed.

The new Lockheed transport probably contains more safety features than any other ship. Most of these are equally valuable in military transport and cargo operations, though the "passenger luxury" features may wait out the war. Outstanding safety innovations include the following:

Stainless steel engine nacelles and cowlings, within which a fire would be confined for 30 minutes without interrupting flight or causing serious damage.

Elaborate Fire Prevention

Automatic fire-control system with 16 thermostatic couplings in each nacelle, advising the Flight Engineer where to operate his remote-control fire extinguishers.

Dual brakes on the dual wheels of the

landing gear, practically eliminating the possibility of brake failure.

The "hot wing" de-icer as developed by Lockheed, using engine exhaust instead of pulsating de-icing boots.

Hydraulic boosters on all controls for the first time, eliminating pilot fatigue because he exerts only a small fraction of the effort required to move the control surfaces.

Short take-off and landing runs and unique maneuverability at slow speeds, due to the double-acting Lockheed Fowler flaps.

Pressurized cabin with two separate superchargers, either of which will maintain correct air density.

Reserve range for flying around severe storm conditions.

Triple tail, giving better control especially after partial engine failure by placing control surfaces directly behind and between the engines.

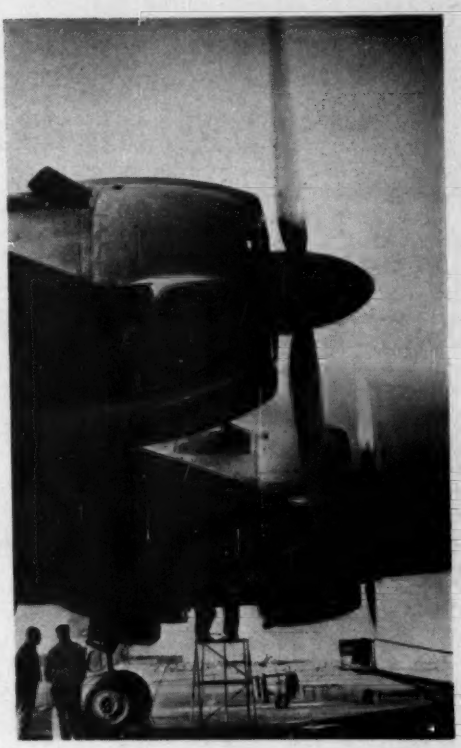
Passageway in wing, permitting the Flight Engineer to reach all four engines in flight.

Excellent flight performance on two or three engines.

Sturdy tricycle landing gear with steerable nose wheel.

To insure its high performance as a transport airplane, *Constellation* probably has received more wind-tunnel testing than any other ship. Successive models spent at least six months of "flying time" in the big Lockheed wind tunnel.

As a luxury liner, *Constellation* could possibly be equipped to seat 60 passengers in lazy comfort, with stations for pilot, co-pilot, flight engineer, navigator and radio operator as well as service attendants. Seats will be convertible to berths in flight, and ample food lockers and lavatory space are provided. A telephone system connects all doors and crew stations, and cargo space is located beneath the floor and in the nose, partitioned from the passenger compartment by fireproof bulkheads.



Shown being warmed up are two of the four mighty Wright Cyclone engines which power America's largest, fastest and most powerful transport, the Lockheed* Constellation. *The most powerful service aircraft engines in the world, they are air-cooled radial types of the 2,000 horsepower series.

Approximately 100 miles an hour faster than present standard air-liners,* Constellation *can transport approximately 57 persons and a crew of five across the continent in less than 9 hours, or speed a light tank and complement of troops across an ocean.

An Omission in Story Of Flying Dutchmen

In Air Transportation's December issue, the lead story, *The Flying Dutchmen Carry On with Cargo,* through an unintentional oversight, failed to carry the name of its capable author, L. F. Bouman.

Mr. Bouman, who now maintains his headquarters in New York, is secretary to the board of KLM and KNILM, the Royal Netherlands Airways and the Royal Netherlands Indies Airways. The Editors hope to bring their readers more about these important organizations in future issues.

Aircraft Parts Development Corp., Summit, N. J., announces that J. D. Shaw, formerly research and production engineer with Metals Disintegrating Co., has joined it as chief powder metallurgist.

Air Cargo Rates May Fall to One-Eighth Their Present Level

Costs As Low As 10 Cents Per Ton-Mile Seen by Hunter As Likely in Postwar Future

By CROIL HUNTER
President and General Manager, Northwest Airlines Inc.

BUSINESS men are primarily concerned with distribution of goods of all kinds to the public—and in transportation, since it plays an important part in that distribution, not only because the cost of the transportation is reflected in the cost of the articles, but because new markets for certain types of merchandise are made possible by the kinds of transportation serving them.

In other words, items such as dungeoness crabs from Puget Sound, orchids, gardenias, and other flowers, as well as tree-ripened fruits, from the West Coast, find new markets in the Mid-West and the East only because they can reach those markets in good condition within a few hours after leaving their source. Northwest Airlines has conducted experiments on special rates for those commodities that have proved that a profitable volume can be obtained on rates that approach a competitive basis with other transportation. It is obvious that retail distributors will benefit from high speed air transport as they will be able to quickly replenish their stocks and change their inventories rapidly, as is sometimes necessary due to public demand.

Croil Hunter

To date we have had only a slight indication of the effect this may have on manufacturers, jobbers and retailers, as the cost of air express has been relatively high and the effect of large scale air transport has not been felt.

It certainly is conceivable that present passenger fares will be reduced from the current rate of around 5 cents per mile to 3 cents per mile, or even less, and that *air cargo rates may be reduced from the present 80 cents to 90 cents a ton-mile to 15 cents or even 10 cents a ton-mile.* With the vastly accelerated war development of larger, more efficient aircraft, the utilization of greatly expanded pro-

duction facilities, and the enormous number of personnel trained during this war period, direct flying costs will be substantially lower. It is certain that as costs are reduced, traffic volume will be increased and thus make these changes possible.

When we consider that present rail express rates average from 11 cents to 18 cents per ton-mile, first class L.C.L. freight shipments from 7 cents to 8 cents per ton-mile, and motor truck rates 3 cents to 4 cents per ton-mile, it is certainly clear that *air cargo rates will be competitive* and that a substantial amount of tonnage now moved by rail express and L.C.L. freight will be diverted to air, as well as some which is now carried by motor truck.

A diversion of even half of such high grade cargo, now carried by surface transportation, will require a fleet of some 25,000 to 30,000 planes, as compared to a maximum of 350 planes used in commercial service before about one-half were requisitioned by the Government. This does not include the additional number that will be required for carrying all first class mail and for carrying Pullman and other first class railroad passengers by air. Probably even that tremendous expansion will not absorb the present productive capacity, but—together with private flying—it will serve as a potential cushion against violent readjustments during the period of transition to follow the war. Furthermore, it will provide a powerful bulwark for our National Defense by constantly maintaining a reservoir of aircraft and trained personnel for any future emergency.

Changes Will Be Gradual

Diversion of cargo from other forms of transportation should not be a matter of great concern to surface carriers because it will be a gradual process. In fact, the expansion of air transport alone creates a great deal of business for the railroads. During the past year Northwest Airlines paid the railroads over $275,000. In the meantime, air transportation will develop much new business and open up new areas now inaccessible for trade, which will create a great deal more business for the other forms of transportation.

Just consider how areas in Central America and in Alaska have been made accessible by the mobility of the airplane and its capacity to disregard terrain difficulties that made pioneering by construction of highways or railroads too slow and expensive. Air transportation will bring into the channels of trade many of the products and resources of hitherto undeveloped regions as well as make new markets and communities to be later served by railroad and highways.

While we are all interested in how the momentous developments and changes now going on will affect us individually—and they are proper subjects for discussion and post-war planning—there are several problems of even more immediate interest which I should like to touch on: (1) Air Transportation in the War Effort; (2) Aviation as an Influence for Lasting Peace; (3) How Aviation Can Aid in Averting a Postwar Economic Collapse.

The Air Transport Command of the Army Air Forces and the Naval Air Transport Service are utilizing airplanes to transport supplies and munitions to all our allies and battlefields in this global war and to bring back casualites and strategic materials. The airlines are currently operating many Army and Navy transport planes from this country to far-flung theatres, conducting operations that a year ago would have been considered impossible. In addition to this they are performing other services for the Armed Forces, as well as operating domestic commercial airlines taxed to capacity with priority passengers, cargo and mail, all vital in the war effort. It is hoped that, with the steadily increased production of transport aircraft and more urgent needs for them in the combat zones relieved, there may be some available for augmenting the airlines' present inadequate airline fleets.

Aviation & Atlantic Charter

It is our conviction that, just as the airplane has been a terrifically destructive force in this war, it can be an equally powerful constructive force in bringing about a new world civilization. With the kind of thinking and planning now being done by some of our foremost statesmen, we can hasten the end of the conflict and immediately progress towards new business horizons.

Vice President Wallace recently said:

"The situation in the world today is parallel in some ways to that in the U. S. just before the adoption of the Constitution, when it was realized that the Articles of Confederation had failed and that some stronger union was needed. Today, measured by travel time, the whole world is actually smaller than was our little country then.

"Item 7 of the Atlantic Charter pro-

claimed the freedom of the seas. In the century ahead of us, however, airports throughout the world will be even more essential to the maintenance of a stable peace than Suez, Gibraltar and the Panama Canal were in the past. The use of these far-flung air bases by the United Nations can do more than prevent war, however. It can tie the peoples of the earth together. It can assure increasing economic opportunity for humble citizens throughout this modern world where science is bringing us ever close to each other."

A World Federation, such as he envisions, knows no artificial boundaries nor barriers except for purposes of local policing and administration. Likewise, in the ocean of air, there are no boundaries or barriers over either land or sea. To permit unnecessary and artificial restrictions to interfere with freedom of travel, the exchange of goods, services and courtesies between the countries of the world, would be like taking away from our Congress the exclusive power, granted by the Constitution, over interstate commerce, and would seriously retard progress toward the goal we all seek.

To Mr. Pogue, Chairman of the Civil Aeronautics Board, which governs all foreign and domestic air transportation in this country [*see* "AIR CARGO & WORLD PEACE," AIR TRANSPORTATION, *January*], we must credit equally advanced thinking when he stated:

"Our future plans must call for a large measure of freedom of the air internationally as we have had freedom of the seas. Aviation has shrunk the world to manageable proportions. No longer will there be continents or parts of continents isolated or unreachable. Our own United States, which many of us in the Middle West were taught to think of as being isolated from the rest of the world, protected by the two greatest oceans in the world, must face the fact that our isolation is ended forever."

"Aviation will broaden our understanding of all the world's people. We will have the means of rubbing shoulders with everyone from everywhere. This is new. This is important. The 'Air Age' will make possible the extension of the good neighbor policy to all people. It will change civilization and, I firmly declare, it will contribute mightily toward the cause of an enduring peace."

Adoption of a policy of freedom of the air and its addition to those freedoms guaranteed by the Atlantic Charter would, in my opinion, be a boon to the war effort and to the peace to follow.

It was gratifying to see a press release from Washington recently that stated that the U. S. is going to seek an understanding on commercial world airline rights in the post-war world before the end of the war and that no treaty is necessary to establish sound principles and that, therefore, there is no point in waiting until after the war to reach understandings. The policies the U. S. will advance involve three fundamentals:

"1. Establishment of the 'right of innocent passage' through the air over any foreign country. The principle means that non-military aircraft could fly over any country, so long as they abide by the regulations made by that country for its own commercial aircraft.

"2. Establishment of the 'right to free landing' on the airports of any foreign country to refuel or for technical reasons. This principle means that non-military aircraft could use foreign airports so long as they did not pick up passengers or discharge them, and so long as they complied with regulations.

"3. Establishment of the principle of 'freedom of the air.' This principle means, any country could license commercial aircraft to engage in commerce between its own country and others, or between two or more foreign countries.

"A parallel, negative principle is that commercial aircraft would not be permitted to engage in 'intranational' commerce except in their own country. In other words, foreign planes could not pick up passengers or freight in New York and land them in Chicago, and our planes could not pick up passengers or freight in London and land them at Liverpool."

Stassen Proposal Praised

Minnesota's Governor Harold E. Stassen's proposal for the organization of the United Nations contemplates the administration and regulation by the United Nations Council of international airports and air routes under which the right of flight, airways traffic, radio

beams, coordination and dissemination of weather data would be governed. Such airports would be policed by the United Nations Legion to be established by the Stassen proposal.

Governor Stassen said also that our country has renounced postwar rights in airports we are now building all over the world with lend-lease funds but that rights should be reserved now for the benefit of the United Nations to provide the basis for such international control.

There has been some concern among our allies and neutrals over the advantage that our country will have in international air routes by reason of our present military operation. Undoubtedly the adoption of the principle of "Freedom of the Air" would reassure them that we seek no advantage, and that as soon as hostilities have ceased, they will be enabled to develop their own transportation systems. As a matter of fact, such an understanding now would in many ways clear the atmosphere, as there is great immediate need for additional international commercial air transportation. Mail, medical supplies, blood plasma, mica and other vital and precious materials need to be exchanged, and the time element is of greatest importance. Civilian as well as military personnel on vital missions could utilize such service, and the morale and confidence of our allies would be constantly strengthened thereby.

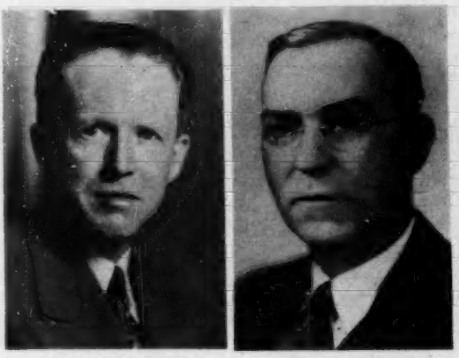
The problem of averting a worldwide postwar depression and the predicted great challenge to our economic system after the war can and will be met by the planning that our military as well as civilian leaders are now doing. Certainly, with ample manpower and facilities of production released for constructive effort and with the prompt and full utilization of technological advances, there will be plenty of everything for everybody. It then becomes only a matter of securing an equitable distribution.

If we can solve the seemingly insoluble problems of conducting a worldwide global war at a tremendous cost in money, property and lives, we should be able to solve a relatively simpler problem of finding the means of distributing throughout the world food and goods to save lives, and to provide a new basis on which to rebuild. We have the unity for conducting the war and we will have the unity for preserving the peace. Truly, a smaller, more understanding and better world will be brought about by the benefits of the Air Age.

Cummings and Shanaphy Rise with Air Express

President L. O. Head of Railway Express Agency has announced appointment of P. H. Cummings as air traffic executive and of J. M. Shanaphy as executive representative at headquarters in New York.

Cummings, heretofore manager of air express in the central departments at Chicago, has been active in the development and promotion of air express service since its inauguration 15 years ago. In his new post, he will direct and further coordination of air and rail express, which extends the advantages of air service to the 23,000 offices of the Express Agency not directly served by air. In 1942, over 1,400,000 shipments were handled in air express service.



J. M. Shanaphy *P. H. Cummings*

Shanaphy, whom Cummings succeeds, takes the place of John C. Emery, now in the U. S. Navy.

Recently, he has been with the transportation department and special representative of the traffic vice president, until his appointment as superintendent of transportation with headquarters at Philadelphia. In August 1940 he became air traffic executive.

A SAMPLE of air-cargo shipping time for some long hops is given by the Air Transport Command: transatlantic time to Britain, six hours; transpacific time to Australia, two and a half days; transatlantic and transafrican time from Miami to Cairo, less than three days.

AIR-PORTATION NEWS

President Harold J. Roig, of Panagra, receives from R. A. Hummel, president of the Inter-American Safety Council Inc., the International Safety Award for 1942, bestowed upon Panagra for safely flying 42,964,911 passenger-miles, or 4,026,711 plane-miles that year without a passenger or crew fatality.

Others Talk, Panagra Acts

New Predictions by an Actual Performer

THE occasion wasn't one primarily to talk about air cargo. Pan American-Grace Airways was getting a coveted prize—the International Aviation Safety Award of the Inter-American Safety Council—for flying 42,964,911 passenger-miles in 1942 without a fatality.

The fact that Panagra, less than a week before, had suffered its first fatal crackup in five and a half years, made the luncheon in Manhattan's India House a sad one, though it did point up the long record of accident-free performance Panagra had turned in. But more than that, it gave Panagra's President Harold Roig a chance to get off his chest some straight-from-the-feed-barrel talk about the future of air transport.

Panagra's Roig could talk from experience—a lot of it—in cargo-carrying. He could also point to his line as the only U. S.-licensed operator of an all-cargo air service (Air Transportation, *November 1942*).

"The enormous development of air trans-

port during the war undoubtedly marks a transition from the early infancy of commercial aviation as we have known it up to now and the next stage of its development. It is difficult to speak of this next stage without appearing to exaggerate.

"Our route serves eight South American countries as well as the Canal Zone—Panama, Colombia, Ecuador, Peru, Bolivia, Brazil, Chile and Argentina. Its lines include three trans-continental routes from points on the West Coast of South America to Buenos Aires and a fourth trans-continental from Lima to Corumba, Brazil, and thence by Panair to Brazil to Rio de Janeiro.

"At the present time, the trip between New York and B. A., 7,000 miles, requires three and one-half days. With night flying and with equipment immediately available after the war the trip can be made in 48 yours at most. *Lima, Peru, now two days from New York, will be a one-day trip. Faster planes already designed and longer flights on great circle courses will cut even this time in two. . . .*

"The minimum first class mail rate today between the U. S. and Argentina and Chile is 40 cents; between the U. S. and Peru, 30 cents. These amounts are even larger when translated into the currencies of these countries. The same factors which will reduce passenger rates *will reduce these mail rates to levels approximating the domestic airmail rate in the U. S.*

Panagra's newest prize.

"Air cargo has already reached a point where we are operating a regular scheduled service of cargo planes. While the discussion regarding the potentialities of air freight is going on, we are testing and developing those potentialities in the laboratory of experience by the actual operation of a freight service."

20,000 Women to Be Hired by Wright Plants

Twenty thousand additional women are to be hired by the New Jersey plants of Wright Aeronautical Corp. to help build Cyclone and Whirlwind aircraft engines to power planes and tanks of the United Nations, it has been announced by Myron B. Gordon, vice president and general manager.

The 20,000 women are needed to fill jobs in new plants opened to meet greatly increased production schedules and also to fill jobs of men leaving for the armed services. They are to be employed as machine tool operators of all kinds, assembly line workers, bench workers, foundry core-makers, engine packers, spare parts packers, inspectors, laboratory technicians, draftsmen, cooks, waitresses, stock clerks and electrical and maintenance workers.

Charles Stevens Is New AA Advertising Chief

Charles A. Stevens, Jr., is the new manager of American Airlines' advertising department, serving under Charles A. Rheinstrom, traffic vice-president. Eleven years with American, Admanager Stevens joined the advertising staff in 1937. His headquarters will be in American's new home office at 100 East 42nd St., New York, across Pershing Square from Manhattan's new Airlines Terminal.

A. J. DeMay
A. J. DeMay & Co.
Chairman

Hugh Coyle
Marks & Coyle
Vice-Chairman

John H. Faunce
J. H. Faunce & Co.

Foreign Freight Forwarders, Customs Brokers Organize Air Cargo Committees

The future of cargo-by-air, especially in and around the Port of New York, took a notable leap forward this month, when two of the port's most influential foreign trade bodies—the New York Foreign Freight Forwarders & Brokers Assn. Inc. and the New York Customs Brokers Assn. Inc.—almost simultaneously formed committees for the study of the subject.

Purpose of both associations, as announced to AIR TRANSPORTATION by the two chairmen —A. J. DeMay for the Forwarders and H. S. Dorf for the Brokers—is to determine as rapidly and as soundly as possible the roles which freight forwarders and customs brokers can play in the development of large-scale shipping by air, especially in foreign trade.

It is probable that the two committees may function as one on many angles of the proposed program of study.

Hugh Coyle, of Marks & Coyle Inc., will serve under DeMay as vice chairman of the Freight Forwarders' committee, assisted by John H. Faunce, of J. H. Faunce & Co.;

E. Hennigson
E. Hennigson Co.

J. E. Lewis
Thomas Cook & Son-Wagons-Lits

J. Maron
Maron & Schaefer

H. J. Morey
Colony Shipping Co.

H. S. Dorf
H. S. Dorf & Co.
Chairman

Arthur Martin
Overton & Co.
Vice-Chairman

Theo. Smith
Theo. B. Smith Co.

Douglas Haig
J. J. Gavin & Co.

E. Hennigson, of E. Hennigson Co. Inc; J. E. Lewis, of Thomas Cook & Son-Wagons-Lits Ltd.; J. Maron, of Maron & Schaefer, and H. J. Morey, of Colony Shipping Co.

Under Dorf, Arthur Martin, of Overton & Co., will serve as vice chairman for the Custom Brokers, whose other committeemen include Theo. Smith, of Theo. B. Smith Co., and Douglas Haig, of J. J. Gavin & Co.

World's Longest Air Cargo Line Opened By Panagra in South America

The last leg of a 5,300-mile air cargo service, the longest commercial sky freight line in the world, stretching from the Canal Zone down the west coast of South America and across the Andes to Buenos Aires, has been put into operation over the 8,800-mile aviation system of Panagra, it was announced on Feb. 9. The new link in aerial box car service extends from Lima, Peru, to Santiago, Chile, and thence over the mountains to Argentina's capital.

First leg of this exclusively freight aerial service was put into operation by Panagra last year [AIR TRANSPORTATION, *October 1942*] over the 1,678-mile route from the Canal Zone to Lima, Peru, as the first all-cargo service to be operated by an air line certificated by the Civil Aeronautics Board. It was an immediate success, Panagra's Douglas DC-2 aerial freights in some weeks carrying as much as 10 tons of cargo originating in the U. S. for South American countries.

Average payloads have been about 3,300 pounds, largely shipments of essential commodities urgently needed in South American business and health services. Northbound cargoes have been largely high-unit-cost raw materials of vital importance to the United Nations' war effort.

Panagra has pioneered for several years in special aerial freight operations in the Andes, several times contracting to carry out large freighting jobs for American mining and industrial companies. In one of these operations nearly 800 tons of mining equipment was transported over the Andes to a mine inaccessible by any other transportation except burros.

Meanwhile another new link in the huge system of Panagra in South America—providing weekly service between Quito, capital of Ecuador, and Ipiales, Andean mountain city in Colombia, near the Ecuadorean border, thence to Cali, Colombia—opened on Feb. 2.

Panagra Cuts Fares For South American Passenger Travel

New tariffs being filed with the Civil Aeronautics Board and in the various South American countries served by Pan American-Grace Airways Inc. provide important reductions in international passenger fares and substantial savings to air travelers public to all points over Panagra's 8,800-mile network including the Canal Zone, Panama, Colombia, Ecuador, Peru, Bolivia, Chile, Brazil and Argentina.

The new rates will become effective as soon as necessary legal formalities have been completed. Sample reductions: Miami to Lima, $320, down from the present $354; to Buenos Aires $495, down from $550.

"These reductions," said Panagra's President Harold J. Roig, "are not made for the purpose of stimulating travel, which in these war times would be manifestly unnecessary and improper. We are today carrying about seven times as many passengers as we did at the outbreak of the war in Europe.

"But increased passenger movement, made possible by increased frequencies and progressive improvements in equipment and operating methods, has—without corresponding increase in flight equiment—reduced passenger-mile cost in spite of steady increase in practically all items of operating expense. We desire to pass this saving on to the traveling public even though travel movement is already at peak.

"From the long-range view we believe that by constantly reducing the cost to the public of the highest type of air travel, we will further strengthen the position of American aviation in South America, and assist good understanding and cooperative effort between the Americas."

Pan Am Will Double Miami Field Capacity

Construction of a terminal addition that will double facilities for the fast-gaining flow of passengers and cargo at Pan American Field, Miami—world's largest international air gateway—has been begun by Pan American Airways.

The addition will provide increased space for the tons of vital wartime cargo now being moved by air, and will house meteorology and U. S. Civil Aeronautics Administration departments.

The expansion also will increase space for immigration and customs offices to permit clearance of passengers from two Clippers at the same time, and also will provide more room for operations workers which will facilitate loading and unloading of planes arriving a few minutes apart.

Spurred by the war and the hemispheric defense program, Pan Am operations are setting new records. During the first 10 months of 1942, Clippers of the eastern division flew more than 7,000,000 miles over the multiple senger travel is 56 per cent above a year ago.

Airline Expansion Goes On: Western Is Recommended For San Diego-Phoenix Run

Western Air Lines has been recommended for a new route from San Diego to El Centro and Phoenix by a trail examiner of the Civil Aeronautics Board, according to Leo H. Dwerlkotte, WAL's executive vice president.

At the same time, Dwerlkotte announced, WAL plans to increase service between Los Angeles and San Diego to eight schedules daily, possibly the first week in February.

Commenting on the San Diego-El Centro-Phoenix recommendation, Dwerlkotte said that if CAB approves establishment of the service will culminate many years of pioneering and effort on the part of Western Air to expand its regional operations into a strong feeder service throughout the west. Western Air pioneered the original route from Los Angeles to San Diego and Phoenix in 1930. This route was discontinued and in 1938 the line again conducted air traffic studies which led to a formal application for a certificate of convenience and necessity over the territory.

Western Air was also recently recommended for Los Angeles-San Francisco operation. Final decision has not been rendered.

Keep 'Em Flying!
Buy War Bonds & Stamps

NEW AIR PRIORITY APPLICATION

THIS FORM MAY BE REPRODUCED IN SAME SIZE AND FORMAT

BUREAU OF THE BUDGET NO. 13-R577-43
APPROVAL EXPIRES JUNE 30, 1943

FORM WP8-2047
(12-16-42)

UNITED STATES OF AMERICA
WAR PRODUCTION BOARD

DATE

NAME OF IMPORTER

APPLICATION FOR AIR CARGO PRIORITY CERTIFICATE

TO: War Production Board, Washington, D. C.
ATTN: *Stockpiling and Transportation Division*

ADDRESS

Return two (2) copies of this application to above address

NAME OF SHIPPER	ADDRESS	CABLE ADDRESS
NAME OF ULTIMATE USER IN U.S.	ADDRESS	CABLE ADDRESS

DESCRIPTION OF GOODS OR MATERIAL REQUIRED

NAME OF COMMODITY		TYPE (*Grade*)
PACKING (*Type of container*)		APPROXIMATE DIMENSIONS OF PACKAGES
NUMBER OF PACKAGES	TOTAL GROSS WEIGHT	TOTAL NET WEIGHT
PLACE OF ORIGIN		PREFERRED AIRPORT OF DEPARTURE
DATE READY FOR LOADING	DATE MATERIAL IS REQUIRED IN U.S.	PREFERRED AIRPORT OF ENTRY IN U.S.

IS AIR TRANSPORTATION ALSO ESSENTIAL FROM AIRPORT OF ENTRY INTO U.S.A. TO POINT OF CONSUMPTION? IF SO, STATE WHY AND GIVE ULTIMATE DESTINATION.

PURPOSE FOR WHICH GOODS OR MATERIALS ARE REQUIRED. IS THIS SHIPMENT OF MATERIALS NECESSARY TO PROMOTE THE WAR EFFORT OF THE UNITED STATES? ☐ YES ☐ NO. IF "YES," TO WHAT USE WILL THE MATERIAL BE PUT? (SPECIFY GOVERNMENT OR OTHER CONTRACTS WITH PREFERENCE RATING TOGETHER WITH PROPORTION OF THE ABOVE SHIPMENT WHICH IS REQUIRED FOR EACH CONTRACT.)

STATE WHY AIR TRANSPORTATION IS CONSIDERED ESSENTIAL:

CERTIFICATION

THE UNDERSIGNED CERTIFIES THAT THE INFORMATION CONTAINED IN THIS REPORT IS CORRECT AND COMPLETE TO THE BEST OF HIS KNOWLEDGE AND BELIEF.

NAME OF COMPANY — SIGNATURE OF AUTHORIZED OFFICIAL

DATE — TITLE

SECTION 35(A) OF THE UNITED STATES CRIMINAL CODE, 18 U.S.C. SEC. 80, MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

Reproduced here in reduced facsimile is the War Production Board's new application form for Air Cargo Priority Certificates. Readers of* Air Transportation *wishing to import goods by air into the U. S. may write the Editors for copies of the blank or address Langdon P. Marvin, Jr., chief, Air Cargo Priorities Section, 2640 Social Security Bldg., Washington.

Mid-South America Sees Rapid Progress In Air Transport

The expensive and difficult task of building an airfield at the border city of Guayaramerin on the Mamore River in the northeast corner of Bolivia has been completed by Lloyd Aereo Boliviano.

The Mamore River forms the boundary between eastern Bolivia and Brazil. On the opposite side of the river from Guayaramerin is the Brazilian town of the same name (Guajara-Mirin is the spelling in Portugese), which serves as the southern terminus of the famous 228-mile Madeira-Mamore Railway. This railway connects Guajara-Mirin with Porto Velho on the Madeira River.

Since Sept. 10 planes have stopped at the new Guayaramerin airport on weekly passenger and mail flights between La Paz, capital of Bolivia, and Riberalta and other towns in the Provinces of Beni and Pando.

Panair do Brasil now operates an air mail service from Belem, from the mouth of the Amazon River, up the Amazon and Madeira rivers as far as Porto Velho. This air line is expected soon to be extended 228 miles farther to Guajara-Mirin. When the new extension is established a transcontinental air service will be in operation from the Pacific to the Atlantic across the widest part of South America, over the Andes Mountains and down the Amazon River to Belem.

Because of construction difficulties at the site of the airport at Guayaramerin, an unusually large financial investment was required. Part of the site was swampy and most of it was covered with heavy jungle growth. Including the radio station and other buildings, the cost of this new airport is expected to exceed 1,000,000 bolivianos.

Guayaramerin, with a population of 600, is one of several remote communities of the Amazon valley destined to play an important rôle in the rapidly growing wild rubber industry.

The U. S. Government in cooperation with Bolivia has begun a program of malaria control, drainage, jungle clearance and purification of the water supply in this region.

Jungle growth will be cleared for one and a half kilometers beyond the town.

Dalby Is New Traffic Chief for Trans-Canada

W. J. Dalby, of Winnipeg, has been appointed traffic manager of Trans-Canada Air Lines, with headquarters in Winnipeg. Dalby hails from the pioneer stage of air traffic in Canada, with experience which began in 1925 when he was with Thomas Cook & Son at Vancouver and became the first person in the Dominion to be connected with an air traffic service.

W. J. Dalby

He was traffic representative for the Alaska-Washington Line which covered a route from Seattle and Vancouver, via Victoria, to Juneau. Later he joined Canadian Airways, still later United Air Lines and in 1938 he became traffic manager at Vancouver for Trans-Canada Air Lines. In 1941 he was promoted to western traffic manager and transferred to Winnipeg. The new appointment now effective establishes him as traffic manager for the entire TCA system. He is a native of Vancouver, B. C.

UAL Dramatizes Air Industry's War Tasks

The story of airlines' vital war job is graphically told in a four-page pictorial folder which United Air Lines is sending to its key passenger lists.

Speaking for the industry as well as for UAL, the folder describes the essential services being performed by the nation's airlines in fast movement of passengers, mail and express on regular schedules, in operation of contract cargo services for the Air Transport Command, in training of military personnel, in modifying military planes preparatory to combat duty.

Keep 'Em Flying . . .
Buy War Bonds

Britons may draw designs of counter-rotating propellers to help pave the way for bigger and faster cargoplanes as well as warplanes (see pages 6-7), but United Aircraft Corp.'s Hamilton Standard Propellers division has already made 'em. First flight of any American counter-rotating propeller of the constant speed type was made in mid-January at East Hartford, Conn. This one is 12-feet in diameter and is really two three-bladed screws together.

Sign of the Times: Aircraft Maker Heads Automotive Engineers

The Society of Automotive Engineers, sponsor of the historic Chicago AIR CARGO conference (AIR TRANSPORTATION, *December and January*) has chosen as its president Mac Short, vice-president in charge of engineering of Vega Aircraft Corp., of Burbank, Cal. His reputation as a designer and builder of vehicles of the air parallels with Past President A. W. Herrington's (Marmon-Herrington Co.) prominence in developing vehicles for operation on the ground.

Short, like Herrington, got the inspiration for his life's work in World War I, where he served as a flying lieutenant. After the Armistice, he earned his way through college by barnstorming flights during weekends and summer vacations. Graduating in 1922, he reentered the Army as a junior aeronautical engineer. From 1925 to 1927 he was an instructor in aeronautical engineering at the Massachusetts Institute of Technology.

In 1927 he was one of the founders of Stearman Aircraft Co., and for ten years was vice-president and chief engineer. He organized, and became president of Vega Aircraft Corp. in 1937, relinquising administrative duties in 1940 to devote his full time to aeronautical engineering and further development of Vega-designed aircraft.

Herrington continues his active participation in S. A. E. affairs, as a member of the National Council. He is also a member of the board of governors of the Society of American Military Engineers, director of the Army Ordnance Assn., and a director of Aviation Corp., while running of his own truck and tank plant in Indianapolis.

Air Transportation Books

Commercial Air Transportation, by Dr. John H. Frederick, the University of Texas' professor of transportation and industry,* has been off the press for several months, but it contains a vast store of information about the past, present and future of air transport that is as fresh as if it were written yesterday.

Like other commentators on the subject of air transportation, he has much to say on the subject of air cargo and its future. What Dr. Frederick says is measured and supported by lots of evidence, but he appears to lean rather more toward the high optimism of Grover Loening than toward the recent ultra-conservatism of United Air Lines' President W. A. Petterson (Air Transportation, *December 1942*).

Also like some other observers, Dr. Frederick believes the established domestic airlines have done less than enough to develop the future in terms of air cargo carrying. Particularly, he points out, "the type of flying equipment to be used in air cargo services has received too little attention" from them.

Despite the fact that only some 50 pages, or about a tenth of his volume, are devoted to the cargo side of air transport, it is obvious that Frederick firmly believes that air cargo should not be a stepchild of the older and (so far) bigger business of hauling passengers and mail. "Among the few persons who have been interested and who have written on the matter, there is unanimous opinion that between cities where the volume is sufficient to warrant it, air express and other cargo should be transported *in cargo planes, separate from passengers and mail (italics ours.—Ed.)*. Only thus, he thinks, can air cargo come of age as a useful instrument of American business.

That Dr. Frederick has his eyes wider open that most who have looked at the subject is graphically proved by his throwing up two challenging possibilities in the direction of more economical air cargo transport:

Why, he asks, in effect, *has nobody brought Diesel engines into the picture?* That is, nobody in this country. "As this type of engine is much more economical on fuel, its future use seems certain," declares Dr. Frederick, with the authoritative tone of one who knows.

Why, he again challenges, in effect, *have practically all writers on air cargo ignored the possible use of dirigibles?* "The carrying capacity of these great ships would be tremendous and they would be veritable freight trains in the air . . . serviced by small land-based planes."

These are, indeed, vital and important questions. It is wholly incorrect for anyone who attempt to appraise the future possibilities of air cargo operation on types of planes in use today which have in no way been designed as cargo carriers, either from the standpoint of interior design or of economical operation.

One point, however, on which the professor leaves himself open for the same kind of challenge he shoots at the aviation industry, is that of gliders. Diesel engines, burning relatively cheap oils instead of high-octane gasoline, and dirigibles with tonnage-lifting capacity perhaps far beyond any plane even dreamed today, are—it is true—neglected possibilities. But gliders are by no means neglected—either by the Army [*see page 00*] or by commercial aviation [*see Richard C. duPont's article on Glider Pickups in* Air Transportation, *December 1942*], although little or none of the work with gliders seems to have been done by the major airlines.

* * *

Not a book for the casual reader, Commercial Air Transportation is one that any layman interested in the future possibilities of air transport in this country can read with high interest and with profit.

Especially interesting are the pages which trace the rise of air transport in the U. S. from its early barnstorming days through the great air mail scandal of the early Roosevelt days. This retrospective picture is drawn not only in terms of the airlines, but also from the standpoint of the growth of federal regulation of the air and the development of equipment to do the job. Maps, charts and photographs abound, and add much to the overall effectiveness of the volume.

** Published by Richard D. Irwin Inc., Chicago. 505 pages. 45 tables and 44 charts. $4.00.*

Wartime Air Triumph: Double the Cargo With Half the Planes

U. S. Domestic Airlines Turn In Spectacular Record for 1942; Passenger Traffic Also Gains

GLUM as things looked for the score of domestic airlines of the U. S. last spring when the Government slashed their combined fleets of transport planes from 352 to 166, the nation's first full year of war saw the lines turning in the biggest performance of their careers.

Total miles flown declined slightly, due to abandonment of some less strategic routes. But passengers carried climbed 9.5 per cent—no gain to sneeze at even if the lines had had plenty of equipment. But air cargo in the form of express made the real year-end news: total express tonnage was much more than doubled—up 110 per cent from 1941's 9,604.8 tons to a relatively whopping 20,170.1 tons.

None of the figures, of course, cover any part of the lines' admittedly spectacular job of cargo-carrying for the Armed Forces and other Government departments—a task in which both mileage flown and tonnage hauled is known to be bigger than that of all regularly scheduled operations.

Most of the huge job of expanding in spite of sharply contracted equipment was done in 1942, and airline executives last month, though proud of the record, were inclined to say of this year: "You haven't seen anything yet!"

Just as eloquent as any statistics, too, was the known—though not elaborated—fact that many an airline wholly domestic before Pearl Harbor has joined pioneering Pan American and the newer American Export in foreign service—for the Government if not on a regularly scheduled basis. Most notable publicized expansion of a domestic airline, of course, was American Airlines' extension of service across the Rio Grande to Monterrey and Mexico City [AIR TRANSPORTATION, *October 1942*].

Sample reports from individual lines:

Northwest Airlines followed the overall trend closely, with express up from 709,710 lbs. in 1941 to 1,163,249 in 1942. Express pound-miles (a more indicative statistic, indicating longer hauls of cargo) were up from 416,048,017 to 856,605,160.

Trans-Canada Air Lines, up across the border, more than doubled its express volume, which was up to 362,837 lbs. from 173,192 lbs. December's express volume almost tripled December '41.

Braniff Airways' express pound-miles went up nearly 75 per cent, from 222,732,489 to 388,626,007.

Western Air lines upped its express pound-mileage figure by a clean 100.93 per cent, ending up with a total of 567,032,833, as President William A. Coulter exulted in a comparison with WAL's first year of operation in 1926. In that whole year, Western hauled the bantamweight total of 263 lbs. of express and only 71,414 lbs. of mail. Last year, the express total was just a jump or two behind the mail total, measured in pound-miles.

Other highlights on AIR CARGO's all-time biggest year:

New York's big **LaGuardia Field** turned

in a 1942 record of handling more than 3,900,000 lbs. of air express, up 64 per cent from 1941's figure, despite declines in shipments of such items as advertising materials (such as printing plates and radio transcriptions), textiles, bond prospectuses, wearing apparel and radio. Average weight per shipment doubled, and individual 100-lb. shipments are "the rule rather than the exception now," reported Railway Express Agency's air division. Bulk of the year's traffic was said to be war material.

On the air mail front, United Air Lines pointed with pride to a December average of 1,100 lbs. per flight between New York and San Francisco—an estimated 46,000-odd envelopes of mail on every plane and an all-time high, according to C. P. Graddick, United's cargo (express-mail-freight) director.

LETTERS *to the Editors*

Priorities Chief Writes . . .

I have read with much interest the December 1942 AIR TRANSPORTATION.

I would also like to receive, if possible any minutes or reports on the talks given by the various persons at the SAE Air Cargo Engineering meeting, Dec. 8-9.

We are engaged in setting the priorities schedules for all imports of cargo by air on Army, Navy foreign or commercial planes, and also on the movements of cargo from China to India. During the past year air transportation has been invaluable to our imports program, bringing in large quantities of strategic raw materials from areas where ocean shipping has been either inadequate, too slow or too dangerous. . . .

LANGDON P. MARVIN, JR.
Chief, Air Cargo Priorities
War Production Board
Washington, D. C.

Reader Marvin will be welcomed as a subscriber, of course. Already, in the December issue, he has much of the SAE Air Cargo meeting's proceedings. En route to him now are copies of the January issue, which had a second large section devoted to the Chicago gathering of cargo experts, and of this issue, which reproduces the challenging statement on gliders for cargo made by the late Major Lewis B. Barringer (see page 12).—ED.

Applause from Col. Evans . .

. . . I am very much pleased with your . . . magazine. I think it is a handy size and fills a much felt need.

E. S. EVANS
President
Evans Products Co.
Detroit, Mich.

Congratulations, Cont'd

AIR TRANSPORTATION is a very worthwhile addition to the air literature of America. Its very existence is indeed indicative that commercial aviation is passing into a new phase.

HUGH KEMP
Air Cadet League of Canada;
Managing Editor,
Canadian Air Cadet.

My congratulations to you on your highly interesting AIR TRANSPORTATION . . .

To be very frank, I think you have done a very thorough job of covering . . . air cargo development in this country. Your pictures of NAT's old Liberty-powered Douglas and the old Handley-Page biplanes brought up some very pleasant memories. Your coverage of the airlines picture was especially complete.

Here's wishing you all kinds of success.

MARK E. NEVILS
Curtiss-Wright Corp.
New York, N. Y.

Here's wishing you genuine success in the launching of your journalistic venture in the realm of the world's newest and fastest transportation medium.

R. H. HERRNSTEIN
Assistant to the President
Northeast Airlines Inc.
Boston, Mass.

I know that the success of this timely magazine will be unbounded.

GEORGE MASON
Director of Public Relations
Pennsylvania-Central Airlines Corp., Washington, D. C.

AIR TRANSPORTATION

AIR CARGO—FREIGHT • EXPRESS MAIL • AIR COMMERCE—DOMESTIC • INTERNATIONAL

JOHN F. BUDD
Editor and Publisher

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Whatever We Do, We Must Start Now

Thanks most recently to REPRESENTATIVE CLARE BOOTHE LUCE the question of where American air transport is headed after the war is now out in the open. Which is a good thing, whether one agrees with the charming though sometimes sharp-tongued Congresswoman from Connecticut or not.

The question of whether there should be "freedom of the air" or not is much too far reaching an issue for any present or potential shipper of CARGO-BY-AIR to decide it for himself on the spur of the moment. It requires study—and it is AIR TRANSPORTATION'S purpose to aid that study in every possible way.

To that end, we give you, in the pages of this issue, the full portion of the report of REPRESENTATIVE JACK NICHOLS to the House of Representatives which relates to air cargo. Congressman Nichols heads a committee specially named to investigate air accidents—but one will quickly discover that his report goes far beyond that question. Indeed, his proposal for a standing committee of the House on aviation—to relieve the present burden on the ever busy Interstate and Foreign Commerce Committee—constitutes a subject that every air shipper should ponder carefully in his own interest, whether he himself has ever been off the ground as an air passenger.

The Nichols proposal already has wide support—and strong opposition.

On the other side of the "freedom of the air" issue, we give you this month the views of CROIL HUNTER, president of the up-and-coming NORTHWEST AIRLINES, INC. You will find his a stimulating view which is held by many ranking air transport operators as well as by Vice President Wallace.

This is just the beginning of the debate. As it proceeds, AIR TRANSPORTATION purposes to bring to its readers every possible aid in arriving at the right conclusions on a grave and vital issue.

We were in good company back in December, when we published our story, *The Flying Dutchmen Carry On with Cargo,* it seems. Less than a month later, on Jan. 20, out comes the *Saturday Evening Post* with its own Flying Dutchman story: *The Flying Dutchmen of Dixie,* subtitled *The Royal Dutch Air Force of Jacksondam, Miss.* The *Post's* story is all about the Dutch military pilots based in the South following scores of hairbreath escapes form the conquerors of their European and East Indies homelands.

Another esteemed and notable contemporary follows AIR TRANSPORTATION this month. *Fortune,* in its new "Business at War" section in its February issue, leads off with a piece about scientific air cargo loading, based on the devices created by Colonel Edward S. Evans and his Evans Products Co., of Detroit.

Colonel Evans told AIR TRANSPORTATION readers quite a lot about the same subject back in December. An authority on gliders, among many other things, the Colonel is also a contributor to a third well-known publication, the *Encyclopaedia Britannica.* We hope to bring you more about him and by him in the future.

QUICK REFERENCE AIR MAIL TABLE

SINCE World War II has interrupted regular air express schedules to many parts of the world, air mail remains in many cases the only means of rapid shipment. The following table, therefore, will be useful in cases not covered by the main air express schedule tables beginning on the opposite page.

All rates are per half-ounce from U. S. international airports of departure. Due to war conditions, departures (except to Latin America, Canada, Newfoundland and Alaska) are not sufficiently regular to be listed and are likewise items of military secrecy.

Air mail to Canada, Newfoundland and Alaska moves at the usual domestic rate of six cents per ounce.

Aden	70c	Ethiopia	70c	Northern Ireland	30c
Afghanistan	70c	France (Unoccupied)	30c	Northern Rhodesia	60c
Algeria	33c	French Cameroons	60c	Nyasaland	60c
Anglo-Egyptian Sudan	70c	French Equatorial Africa	60c	Palestine	70c
Angola	60c	French Guiana	30c	Panama	15c
Anguilla	15c	French Guinea	50c	Paraguay	40c
Antigua	15c	French Somaliland	70c	Peru	30c
Argentina	40c	French Sudan	50c	Portugal	30c
Aruba	25c	French Togoland	45c	Portuguese East Africa	60c
Azores	30c	Gambia	50c	Puerto Rico	10c
Bahamas	10c	Gibraltar	30c	Redonda	15c
Bahrein Islands	70c	Gold Coast Colony	50c	Rio de Oro	40c
Baluchistan	70c	Grenada	15c	Saba	10c
Barbados	25c	Grenadines	15c	St. Christopher	15c
Barbuda	15c	Guadeloupe	15c	St. Eustatius	10c
Belgian Congo	60c	Guatemala	12c	St. Kitts	15c
Bermuda	10c	Haiti	10c	St. Lucia	15c
Bolivia	35c	Hawaii	20c	St. Martin	10c
Bonaire	25c	Honduras (Rep.)	12c	St. Vincent	15c
Brazil	40c	Iceland	30c	Salvador (El)	12c
British Cameroons	60c	India	70c	Saudi Arabia	70c
British Guiana	30c	Iran	70c	Scotland	30c
British Honduras	20c	Iraq	70c	Senegal	45c
British Somaliland	70c	Ireland	30c	Sierra Leone	50c
British Virgin Islands	10c	Italian Somaliland	70c	Southern Rhodesia	60c
Brunei	70c	Ivory Coast	50c	Southwest Africa	60c
Canal Zone	15c	Jamaica	10c	Spain	30c
Canary Islands	40c	Kenya	60c	Spanish Guinea	50c
Cape Verde Islands	55c	Lebanon (Rep.)	70c	Surinam	30c
Ceylon	70c	Liberia	50c	Sweden	30c
Chile	40c	Libya	70c	Switzerland	30c
China (Unoccupied)	70c	Madagascar	60c	Syria	70c
Colombia	35c	Malta	70c	Tanganyika	60c
Costa Rica	15c	Martinique	15c	Trans-Jordan	70c
Cuba	10c	Mauritania	45c	Trinidad	15c
Curacao	25c	Mauritius	60c	Tunisia	33c
Cyprus	70c	Mexico	10c	Turkey	70c
Dahomey	45c	Montserrat	15c	Uganda	60c
Dominica	15c	Morocco	33c	Union of South Africa	60c
Dominican Republic	10c	Mozambique	60c	Uruguay	40c
Ecuador	30c	Nevis	15c	Vatican City State	30c
Egypt	70c	Newfoundland	15c	Venezuela	25c
England and Wales	30c	Nicaragua	12c	Virgin Islands (U. S.)	10c
Eritrea	70c	Niger	45c	Zanzibar (Incl. Pemba)	60c
		Nigeria	50c		

AEIA

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Miami, Fla., Office: 410 N.E. 2nd Ave.
Telephone: Miami 3-4796
Cable Address "Airseaex"

International Express and Mail Tables

Express rates quoted are from the U. S. international airport of departure and are based on the latest prevailing tariffs. Shippers are warned, however, that they are subject to change.

Bro—Brownsville, Tex.
Cg—Chicago
Cub—Cut Bank, Mont.
Eo—El Paso
Fv—Fort Worth
Gf—Grand Forks, N. D.
Lgs—Los Angeles
Mia—Miami
Nyk—New York
Sq—San Diego
Ste—Seattle

International Air Express is subject to two charges: one a charge per pound weight or measurements at carrier's option (200 cu. in. to the pound of weight), the other a charge per $100 of valuation. The two must be added on any shipment to determine the cost. Neither includes insurance, which may be purchased by the shipper from the carrier or otherwise.

Priorities: The air carriers warn all shippers that express traffic, both U. S. Government and commercial, is so heavy that no guarantee can be given that any shipment will depart on any particular plane unless it enjoys U. S. priority. Otherwise it will depart, in relation to other shipments, in the order received at the international airport used, subject to wartime limitations. Shippers should forward cargo to international airports as far in advance of desired departure as possible and should communicate **via Railway Express Agency, Inc.** with the international air carrier as to whether the shipment can be forwarded without priority, as shipments without priority for certain countries are, at present, under embargo. (On cargoes to be shipped via American Export Airlines, Inc., shippers should inquire at their office, Room 920, 25 Broadway, New York.)

International air carriers whose schedules and rates are included here are indicated by the letter following the symbol for the airport:

A—American Airlines.
C—Colonial Air Lines.
E—American Export Airlines.
NW—Northwest Airlines, Inc.
P—Pan American Airways System and affiliates.
T—Trans-Canada Air Lines.
U—United Air Lines.
W—Western Air Lines

LATIN-AMERICA LINES

Destination	U. S. Gateway & Airline	RATES Per Lb.	RATES Per $100 Value	Depart	Mail per ½ Oz.
Antilla, Cuba	Mia P	.24	.25	Dly ex W,Sa	.10
Antofagasta, Chile	Mia P	1.26	.50	M,W,Th,Sa	.40
"	Bro P	1.34	.50	M,Tu,Th,Sa	.40
"	Lgs P	1.95	.50	Su,M,W,F	.40
Aracaju, Brazil	Mia P	1.26	.50	Su,Tu	.40
"	Bro P	1.71	.50	Su,F	.40
"	Lgs P	2.28	.65	Th,Sa	.40
Areia Branca, Brazil	Mia P	1.24	.50	Su	.40
"	Bro P	1.56	.50	F	.40
"	Lgs P	2.13	.50	Th	.40
Arequipa, Peru	Mia P	1.23	.50	Dly ex F	.30
"	Bro P	1.26	.50	Dly ex W	.30
"	Lgs P	1.93	.50	Dly ex Tu	.30
Arica, Chile	Mia P	1.25	.50	M,W,Th,Sa	.40
"	Bro P	1.26	.50	M,Tu,Th,Sa	.40
"	Lgs P	1.94	.50	Su,M,W,F	.40
Asuncion, Para	Mia P	1.73	.50	Su,F	.40
"	Bro P	1.86	.50	W,F	.40
"	Lgs P	2.43	.65	Tu,Th	.40
Bahia, Brazil (*See Sao Salvador*)					
Balboa, Canal Zone	Mia P	.76	.40	Dly	.15
"	Bro P	.90	.40	Dly	.15
"	Lgs P	1.45	.50	Dly	.15
Baracoa, Cuba	Mia P	.28	.25	Dly ex Sa	.10
Barcelona, Venezuela	Mia P	.85	.40	Dly	.25
"	Bro P	1.17	.50	Dly	.25
"	Lgs P	1.78	.50	Dly	.25
Barranquilla, Columbia via Kingston	Mia P	.61	.40	Su,W,F	.35
via Balboa	Bro P	1.03	.40	Dly	.35
"	Lgs P	1.59	.50	Dly	.35
Bauru, Brazil	Mia P	1.58	.50	Su	.40
"	Bro P	1.71	.50	Th	.40
"	Lgs P	2.28	.65	W	.40
Belem, Brazil (*See Paraguay*)					
Bello-Horizonte, Brasil	Mia P	1.65	.50	Su,W,F	.40
"	Bro P	2.13	.50	M,W,F	.40
"	Lgs P	2.69	.65	Su,Tu,Th	.40
Buenos Aires, Argentina	Mia P	1.56	.50	Dly	.40
"	Bro P	1.70	.50	Dly ex W	.40
"	Lgs P	2.26	.65	Dly ex Tu	.40
Cali, Col. via Balboa	Mia P	.89	.40	Dly	.35
"	Bro P	1.03	.40	Dly	.35
"	Lgs P	1.59	.50	Dly	.35
Camaguey, Cuba	Mia P	.26	.25	Dly	.10
Camocim, Brasil	Mia P	1.22	.50	Su	.40
"	Bro P	1.50	.50	F	.40
"	Lgs P	2.05	.50	Th	.40
Campeche, Mexico	Mia P	.41	.25	W	.10
"	Bro P	.51	.40	Dly	.10
"	Lgs P	1.00	.40	Dly	.10
Campo Grande, Brasil	Mia P	1.48	.50	Su, W	.40
"	Bro P	1.61	.50	M,W,Sa	.40
"	Lgs P	2.18	.50	Su,Tu,F	.40
Canavieiras, Brazil	Mia P	1.33	.50	Su,Tu	.40
"	Bro P	1.81	.50	Su,F	.40
"	Lgs P	2 38	.65	Th,Sa	.40
Caracas, Venezuela (*See La Guaira*)					
Caravellas, Brazil	Mia P	1.36	.50	Su	.40
"	Bro P	1.85	.50	F	.40
"	Lgs P	2.41	.65	Th	.40
Caripito, Venezuela	Mia P	.89	.40	Dly	.25
"	Bro P	1.19	.50	Dly	.25
"	Lgs P	1.80	.50	Dly	.25
Cayenne, Fr. Guiana	Mia P	1.02	.40	Su	.30
"	Bro P	1.26	.50	Sa	.30
"	Lgs P	1.91	.50	F	.30
Cayo Mambi, Cuba	Mia P	.26	.25	Dly ex Sa	.10
Chetumal, Mexico	Mia P	.55	.40	W	.10
"	Bro P	.55	.40	M,F	.10
"	Lgs P	1.04	.40	M,F	.10
Chiclayo, Peru	Mia P	1.11	.50	Dly	.30
"	Bro P	1.19	.50	Dly	.30
"	Lgs P	1.81	.50	Dly ex Tu	.30

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per $100 Value		
Cienfuegos, Cuba	Mia P	.28	.18	Su,W,F	.10
C. del Carmen, Mexico	Mia P	.45	.25	W	.10
"	Bro P	.47	.40	Dly	.10
"	Lgs P	.94	.40	Dly	.10
Ciudad Trujillo, D. R.	Mia P	.45	.25	Dly	.10
Cochabamba, Bolivia	Mia P	1.26	.50	W,Sa	.35
"	Bro P	1.35	.50	M,Th	.35
"	Lgs P	1.95	.50	Su,W	.35
Concepcion, Bolivia	Mia P	1.31	.50	Sa	.35
"	Bro P	1.45	.50	Th	.35
"	Lgs P	2.03	.50	W	.35
Cordoba, Argentina	Mia P	1.49	.50	Dly ex F	.40
"	Bro P	1.63	.50	Dly ex W	.40
"	Lgs P	2.19	.50	Dly ex Tu	.40
Coro, Venezuela (via Barranquilla)	Mia P	.74	.40	Su,W	.25
"	Bro P	1.11	.50	Dly	.25
"	Lgs P	1.69	.50	Dly	.25
Coro, Venezuela (via Maracaibo)	Mia P	.74	.40	Tu,Sa	.25
Corumba, Brazil	Mia P	1.41	.50	Su, W	.40
"	Bro P	1.56	.50	Tu,Sa	.40
"	Lgs P	2.13	.50	M,F	.40
Cristobal, Canal Zone	Mia P	.76	.40	Dly	.15
"	Bro P	.92	.40	Dly	.15
"	Lgs P	1.46	.50	Dly	.15
Cuenca, Ecuador	Mia P	1.06	.40	Su,W,F	.30
"	Bro P	1.15	.50	M,W,F	.30
"	Lgs P	1.76	.50	Su,Tu,Th	.30
Curityba, Brazil (Via Rio)	Mia P	1.60	.50	Su,W,F	.40
"	Bro P	2.00	.50	M,W,Sa	.40
"	Lgs P	2.58	.65	Su,Tu,F	.40
David, Panama	Mia P	.82	.40	Dly	.15
"	Bro P	.85	.40	Dly	.15
"	Lgs P	1.38	.50	Dly	.15
Esmeraldas, Ecuador	Mia P	.99	.40	W	.30
"	Bro P	1.11	.50	M	.30
"	Lgs P	1.71	.50	Su	.30
Florianopolis, Brazil	Mia P	1.63	.50	Su,W,F	.40
"	Bro P	2.11	.50	M,W,F	.40
"	Lgs P	2.68	.65	Su,Tu,Th	.40
Fort de France, Martinique	Mia P	.71	.40	Su,Sa	.15
"	Bro P	1.16	.50	M,F	.15
"	Lgs P	1.78	.50	Su,Th	.15
Fortaleza, Brazil (Ceara)	Mia P	1.23	.50	Su,Tu,Th,Sa	.40
"	Bro P	1.54	.50	Su,Tu,Th,F	.40
"	Lgs P	2.10	.50	M,W,Th,Sa	.40
Georgetown, British Guiana	Mia P	.90	.40	Su,Sa	.30
"	Bro P	1.24	.50	Th,Sa	.30
"	Lgs P	1.88	.50	W,F	.30
Guadalajara, Mexico	Bro P	.43	.25	Dly	.10
"	Lgs P	.59	.40	Dly	.10
Guantanamo, Cuba	Mia P	.28	.25	Dly ex Su	.10
Guatemala City, Gua	Mia P	.74	.40	Dly	.12
"	Bro P	.53	.40	Dly	.12
"	Lgs P	1.08	.50	Dly	.12
Guayaquil, Ecuador	Mia P	1.04	.40	Dly	.30
"	Bro P	1.15	.50	Dly	.30
"	Lgs P	1.75	.50	Dly	.30
Havana, Cuba	Mia P	.20	.18	Dly	.10
Hermosillo, Mexico	Bro P	.77	.40	Dly	.10
"	Lgs P	.24	.25	Dly	.10
Iguassu Falls, Brazil	Mia P	1.69	.50	Su,F	.40
"	Bro P	1.91	.50	W,F	.40
"	Lgs P	2.48	.65	Tu,Th	.40
Ixtepec, Mexico	Mia P	.76	.40	W	.10
"	Bro P	.41	.25	M,W,F	.10
"	Lgs P	.89	.40	M,W,F	.10
Joao Pessoa, Brazil (Cabedello)	Mia P	1.25	.50	Tu	.40
"	Bro P	1.64	.50	Su	.40
"	Lgs P	2.20	.50	Sa	.40
Kingston, Jamaica	Mia P	.39	.25	Su,W,F	.10
La Guaira, Venezuela	Mia P	.81	.40	Dly	.25
"	Bro P	1.15	.50	Dly	.25
"	Lgs P	1.75	.50	Dly	.25

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per $100 Value		
La Paz, Bolivia	Mia P	1.25	.50	Su,Tu,W,Sa	.35
"	Bro P	1.30	.50	Su,M,Th,F	.35
"	Lgs P	1.95	.50	Su,W,Th,Sa	.35
Lima, Peru	Mia P	1.18	.50	Dly	.30
"	Bro P	1.24	.50	Dly	.30
"	Lgs P	1.88	.50	Dly	.30
Loja, Ecuador	Mia P	1.08	.50	Su,W,F	.30
"	Bro P	1.17	.50	M.W.F	.30
"	Lgs P	1.78	.50	Su,Tu,Th	.30
Maceio, Brazil	Mia P	1.26	.50	Su,Tu	.40
"	Bro P	1.68	.50	Su,F	.40
"	Lgs P	2.24	.50	Th,Sa	.40
Managua, Nicaragua	Mia P	.86	.40	Dly	.12
"	Bro P	.71	.40	Dly	.12
"	Lgs P	1.22	.50	Dly	.12
Manaos, Brazil	Mia P	1.24	.50	W,Sa	.40
"	Bro P	1.56	.50	M,Th	.40
"	Lgs P	2.13	.50	Su,W	.40
Manta, Ecuador	Mia P	1.03	.40	W,F	.30
"	Bro P	1.14	.50	Th,Sa	.30
"	Lgs P	1.74	.50	W,F	.30
Manzanillo, Cuba	Mia P	.26	.25	Dly ex Su	
Maracaibo, Venezuela (via Barranquilla)	Mia P	.69	.40	Su,W	.25
"	Bro P	1.08	.50	Dly	.25
"	Lgs P	1.66	.50	Dly	.25
Maracaibo, Venezuela (direct)	Mia P	.69	.40	Tu,Sa	.25
Masatlan, Mexico	Bro P	.57	.40	Dly	.10
"	Lgs P	.45	.25	Dly	.10
Medellin, Columbia (via Boquilla)	Mia P	1.06	.40	Su,W,F	
Medellin, Columbia (via Balboa)	Mia P	1.06	.40	Tu,Sa	
"	Bro P	1.10	.50	M,Th,F	
"	Lgs P	1.65	.50	Su,W,Th	
Mendoza, Argentina	Mia P	1.41	.50	M,W,Th,Sa	.40
"	Bro P	1.55	.50	M,Tu,Th,Sa	.40
"	Lgs P	2.11	.50	Su,M,W,	.40
Merida, Mexico	Mia P	.37	.25	W	.10
"	Bro P	.55	.40	Dly	.10
"	Lgs P	1.04	.40	Dly	.10
Mexicali, Mexico	Lgs P	.20	.18	Dly	.10
Mexico City, Mexico	Mia P	.69	.40	W	.10
"	Bro P	.26	.25	Dly	.10
"	Lgs P	.69	.40	Dly	.10
"	Lgs A	.70	.35	Dly	.10
"	Fv A	.42	.25	Dly	.10
"	Eo A	.42	.25	Dly	.10
"	Sq A	.74	.35	Dly	.10
Minatitlan, Mexico	Mia P	.53	.40	W	.10
"	Bro P	.39	.25	Dly	.10
"	Lgs P	.86	.40	Dly	.10
Monterrey, Mexico	Fv A	.34	.25	Dly	.10
"	Eo A	.34	.25	Dly	.10
"	Lgs A	.62	.35	Dly	.10
"	Sq. A	.74	.35	Dly	.10
Montevideo, Uruguay* (See notes below)					
Nassau, Bahamas	Mia P	.20	.18	Dly ex Su,W	.10
Natal, Brazil	Mia P	1.25	.50	Su,Tu,Th,Sa	.40
"	Bro P	1.61	.50	Su,Tu,Th,F	.40
"	Lgs P	2.18	.50	M,W,Th,Sa	.40
Oruro, Bolivia	Mia P	1.26	.50	Su,Tu,Th	.35
"	Bro P	1.33	.50	Su,Tu,F,Sa	.35
"	Lgs P	1.95	.50	M,Th,F,Sa	.35
Panama City, Panama (*See Balboa, C. Z.*)					
Para (Belem), Brazil	Mia P	1.13	.50	Dly ex M	.40
"	Bro P	1.34	.50	Dly ex Sa	.40
"	Lgs P	1.95	.50	Dly ex F	.40
Paramaribo, Sur	Mia P	.97	.40	Dly ex Su	.30
"	Bro P	1.25	.50	Dly ex F	.30
"	Lgs P	1.90	.50	Dly ex Th	.30

* Shipments for Montevideo must be assessed rates to Buenos Aires plus 55c per 2 lbs. or fraction thereof (min. 55c) for forwarding by other carrier to Montevideo, plus $1.10 per shipment transfer charge at Buenos Aires.

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per $100 Value		
Parnahyba, Brazil	Mia P	1.21	.50	Su	.40
"	Bro P	1.48	.50	F	.40
"	Lgs P	2.04	.50	Th	.40
Point a Pitre, Guadeloupe	Mia P	.66	.40	Su,Sa	.15
"	Bro P	1.14	.50	M,F	.15
"	Lgs P	1.74	.50	Su,Th	.15
Port au Prince, Haiti	Mia P	.37	.25	Dly	.10
Port of Spain, Trinidad	Mia P	.79	.40	Dly ex Su	.15
"	Bro P	1.20	.50	Dly	.15
"	Lgs P	1.81	.50	Dly	.15
Porto Alegre, Brazil	Mia P	1.70	.50	Su,W,F	.40
"	Bro P	2.19	.50	M,W,Sa	.40
"	Lgs P	2.75	.65	Su,Tu,F	.40
Puerto Suarez, Bolivia	Mia P	1.41	.50	M,Th	.35
"	Bro P	1.56	.50	Tu,Sa	.35
"	Lgs P	2.13	.50	M,F	.35
Preston, Cuba	Mia P	.24	.25	Dly ex Sa	.10
Quito, Ecuador	Mia P	.97	.40	Dly	.30
"	Bro P	1.09	.50	Dly	.30
"	Lgs P	1.68	.50	Dly	.30
Recife, Brazil	Mia P	1.26	.50	Su,Tu,Th,Sa	.40
"	Bro P	1.65	.50	Su,Tu,Th,F	.40
"	Lgs P	2.21	.50	M,W,Th,Sa	.40
Rio de Janeiro	Mia P	1.50	.50	Su,W,F	.40
"	Bro P	1.98	.50	M,W,F	.40
"	Lgs P	2.54	.65	Su,Tu,Th	.40
Robore, Bolivia	Mia P	1.38	.50	Th	.35
"	Bro P	1.51	.50	Tu	.35
"	Lgs P	2.08	.50	M	.35
Salinas, Ecuador	Mia P	1.05	.40	Th, Sa	.30
"	Bro P	1.15	.50	Tu, Th	.30
"	Lgs P	1.75	.50	M,W	.30
Salta, Argentina	Mia P	1.30	.50	Su,Tu	.40
"	Bro P	1.45	.50	Su,F	.40
"	Lgs P	2.03	.50	Th,Sa	.40
San Ignacio, Bolivia	Mia P	1.33	.50	Th	.35
"	Bro P	1.48	.50	Tu	.35
"	Lgs P	2.04	.50	M	.35
San Jose, Bolivia	Mia P	1.35	.50	Th	.35
"	Bro P	1.50	.50	Tu	.35
"	Lgs P	2.08	.50	M	.35
San Jose, Costa Rica	Mia P	.89	.40	Dly	.15
"	Bro P	.76	.40	Dly	.15
"	Lgs P	1.31	.50	Dly	.15
San Juan, Puerto Rico	Mia P	.53	.40	Dly	.10
San Salvador, El Salvador	Mia P	.79	.40	Dly	.12
"	Bro P	.61	.40	Dly	.12
"	Lgs P	1.14	.50	Dly	.12
Santa Cruz, Bolivia	Mia P	1.28	.50	M,Th	.35
"	Bro P	1.43	.50	Tu,Sa	.35
"	Lgs P	1.99	.50	M,F	.35
Santiago, Chile	Mia P	1.38	.50	M,W,Th,Sa	.40
"	Bro P	1.51	.50	M,Tu,Th,Sa	.40
"	Lgs P	2.08	.50	Su,M,W,F	.40
Santiago, Cuba	Mia P	.26	.25	Dly ex Su	.10
Sao Luis, Brazil	Mia P	1.19	.50	Su,Tu,Th,Sa	.40
"	Bro P	1.43	.50	Su,Tu,Th,F	.40
"	Lgs P	1.99	.50	M,W,Th,Sa	.40
Sao Paulo, Brazil (via Rio)	Mia P	1.55	.50	Su,W,F	.40
"	Bro P	2.04	.50	M,W,Sa	.40
"	Lgs P	2.60	.65	Su,Tu,F	.40
Sao Salvador, Brazil (Bahia)	Mia P	1.28	.50	Su,Tu,Th,Sa	.40
"	Bro P	1.76	.50	Su,Tu,Th,F	.40
"	Lgs P	2.33	.65	M,W,Th,Sa	.40
St. Johns, Antigua, British West Indies	Mia P	.64	.40	Sa,Su	.15
"	Bro P	1.13	.50	M,Sa	.15
"	Lgs P	1.73	.50	Su,F	.15
St. Thomas, V. I.	Mia P	.57	.40	Sa,Su	.10
"	Bro P	1.10	.50	M,F	.10
"	Lgs P	1.68	.50	Su,Th	.10
Talara, Peru	Mia P	1.08	.50	Dly	.30
"	Bro P	1.17	.50	Dly	.30
"	Lgs P	1.79	.50	Dly	.30
Tampico, Mexico	Bro P	.20	.18	Dly	.10
"	Lgs P	.81	.40	Dly	.10
Tapachula, Mexico	Bro P	.53	.40	Dly	.10
"	Lgs P	1.02	.40	Dly	.10
Tegucigalpa, Honduras	Mia P	.82	.40	Dly	.12
"	Bro P	.68	.40	Dly	.12
"	Lgs P	1.18	.50	Dly	.12
Tres Lagoas, Brazil	Mia P	1.53	.50	Su	.40
"	Bro P	1.66	.50	We	.40
"	Lgs P	2.23	.50	Tu	.40
Tucuman, Argentina	Mia P	1.34	.50	Su,Tu	.40
"	Bro P	1.49	.50	Su,F	.40
"	Lgs P	2.05	.50	Th,Sa	.40
Turbo, Columbia (via Barranquilla)	Mia P	1.06	.40	Su,W,F	
Turbo, Columbia (via Balboa, C. Z.)	Mia P	1.06	.40	Tu,Sa	
"	Bro P	1.10	.50	M,Th,F	
"	Lgs P	1.65	.50	Su,W,Th	
Tuxpan, Mexico	Bro P	.20	.18	Dly	
"	Lgs P	.83	.40	Dly	
Uyuni, Bolivia	Mia P	1.26	.50	Su,Tu	.35
"	Bro P	1.38	.50	Su,F	.35
"	Lgs P	1.95	.50	Th,Sa	.35
Veracruz, Mexico	Mia P	.57	.40	We	.10
"	Bro P	.33	.25	Dly	.10
"	Lgs P	.79	.40	Dly	.10
Victoria, Brazil	Mia P	1.41	.50	Su,Tu	.40
"	Bro P	1.90	.50	Su,F	.40
"	Lgs P	2.46	.65	Th,Sa	.40
Villahermosa, Mexico	Mia P	.49	.40	We	.10
"	Bro P	.43	.25	Dly	.10
"	Lgs P	.90	.40	Dly	.10

ATLANTIC LINES

Botwood, Newfoundland	Nyk P	.81	.40	Twice wk	.15
England via Foynes*	Nyk E	(Rates	on	Application)	.30
"	Nyk P	(Rates	on	Application)	.30
Foynes, Eire	Nyk P	1.78	.50	Twice wk	.30
"	Nyk E	2.00	.50	.....	.30
Hamilton, Bermuda	Nyk P	.55	.25	Twice wk	.10
"	Nyk E	.55	.25	.....	.10
Horta, Azores	Nyk P	1.70	.40	Once 2 wks	.30
Lisbon, Portugal	Nyk P	2.00	.50	Once 2 wks	.30
Scotland via Foynes*	Nyk E	(Rates	on	Application)	.30
"	Nyk P	(Rates	on	Application)	.30
Shediac, N. B	Nyk P	.51	.25	Twice wk	.06
Wales via Foynes*	Nyk E	(Rates	on	Application)	.30
"	Nyk P	(Rates	on	Application)	.30

ALASKA LINES

Bethel, Alaska	Ste P	1.11	.40	Schedules not published	.06
Fairbanks, "	Ste P	.90	.40	"	.06
Flat, "	Ste P	1.05	.40	"	.06
Galena, "	Ste P	1.00	.40	"	.06
Golovin, "	Ste P	1.08	.40	Nov. 1-Apr. 30	.06
Hot Springs, "	Ste P	.92	.40	Nov. 1-Apr. 30	.06
Juneau, "	Ste P	.56	.25	Schedules not published	.06
McGrath, "	Ste P	1.00	.40	"	.06
Nome, "	Ste P	1.11	.40	"	.06
Nulato, "	Ste P	1.03	.40	Nov. 1-Apr. 30	.06
Ophir, "	Ste P	1.03	.40	Schedules not published	.06
Ruby, "	Ste P	.99	.40	"	.06
Tanana, "	Ste P	.95	.40	Nov. 1-Apr. 30	.06
Whitehorse, Canada	Ste P	.66	.40	Schedules not published	.06

CANADIAN LINES

Calgary, Alb.	Nyk T	1.02	†	Dly	.06
Edmonton, Alb.	Nyk T	1.06	†	Dly	.06

* British Overseas Airways Corp. carries from Foynes, Ireland, to destinations in England, Scotland, and Wales.

† Canadian air express is carried on the same basis as air express within the U. S.: $50 declared value free; excess charged at 10 cents per $100 or fraction thereof.

NOTE: The per pound rate shown in this column is based on the average package weighing 25 lbs., i.e.: A 1 lb. package from New York to Ontario would cost $1—25 lbs. $4. Average cost per pound: 16 cents.

Destination	U. S. Gateway & Airline	RATES Per Lb.	RATES Per $100 Value	Depart	Mail per ½ Oz.
Halifax, N. S.	Nyk T	.31	†	Dly	.06
Lethbridge, Alb.	Nyk T	.44	†	Dly	.06
" "	CubW	.04	†	Dly	.06
London, Ont.	Nyk T	.22	†	Dly	.06
Montreal, Que.	Nyk C	.12	†	Dly	.06
" "	Nyk T	.12	†	Dly	.06
North Bay, Ont.	Nyk T	.27	†	Dly	.06
Ottawa, Ont.	Nyk T	.18	†	Dly	.06
Regina, Sask.	Nyk T	.76	†	Dly	.06
St. John, N. B.	Nyk T	.31	†	Dly	.06
St. Johns, N. F.	Nyk T	.55	†	Dly	.06
Sydney, N. S.	Nyk T	.36	†	Dly	.06
Toronto, Ont.	Nyk A	.16	†	Dly	.06
"	Nyk T	.16	†	Dly	.06
Vancouver, B. C.	Ste U	.08	†	Dly	.06
"	Nyk T	.56	†	Dly	.06
Windsor, Ont.	Nyk A	.20	†	Dly	.06
"	Cg A	.12	†	Dly	.06
"	Nyk T	.20	†	Dly	.06
Winnipeg, Man.	GfNW	.04	†	Dly	.06
"	Nyk T	.60	†	Dly	.06

† Canadian air express is carried on the same basis as air express within U. S.: $50 declared value free; excess charged at 10 cents per $100 or fraction thereof.

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Planes flying in and out of Miami are operated by Transportes Aereos Centro Americanos (TACA), British West Indian Airways (BWIA), Royal Dutch Airlines (KLM).

These companies operate planes on a non-scheduled basis, mainly under charter, for the transportation of personnel and equipment in the interest of hemisphere defense. It is reported that each flight by these companies is by special permit from the Civil Aeronautics Board and that their planes now carry no commercial passengers, express or cargo shipments.

Nicaro Corp., subsidiary of Freeport Sulphur Co., is operating its own plane to transport equipment and personnel between Miami and Antilla, Cuba, where it has under construction a large plant for production of nickel for the U. S. Government.